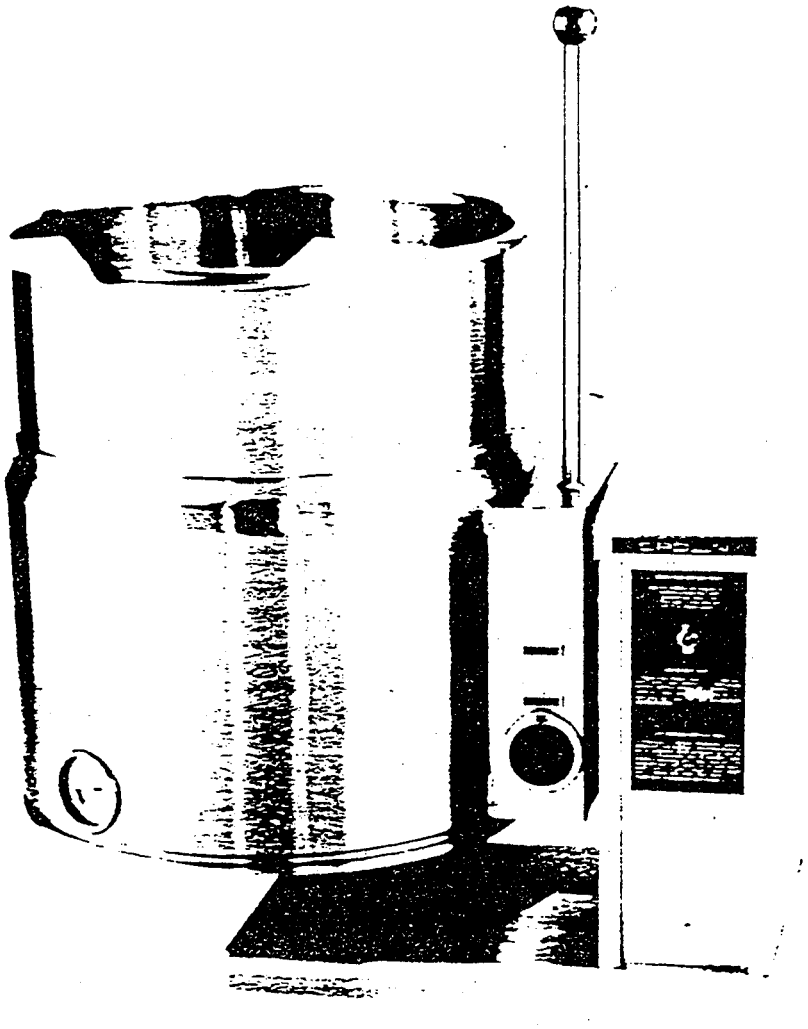
MANUAL FOR SELF-GENERATING COUNTER-TOP

STEAM JACKETED KETTLES

SOUTHBEND MODEL

KECT-05F, KECT-10F



CROWN suggests that this entire manual be read thoroughly and that all instructions be followed carefully.

SECTION	PAGE	DESCRIPTION
Inside Front Cover		Warranty, Damages, etc.
1	2	Introduction - Description - Capacities - Functioning Mode
2	4	Operating Controls and Indicators
3	6	Installation Instructions
4	7	Operating and Cleaning Instructions
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Section 1: SELF-GENERATING COUNTER TOP STEAM JACKETED KETTLES

DESCRIPTION

All CROWN electrically powered kettles described and referred to in this manual are pressure vessels of a double-wall stainless steel construction forming a sealed jacket (chamber) enveloping the tower two thirds of the kettle bowl surface.

The kettle bowl is the container for the food product which ideally should be of a liquid or semi-liquid consistency to achieve complete contact with the bowl surface and thus fully absorb the heat transmitted through that surface from the pressurized steam generated in the kettle jacket.

The jacket is intended to function as a self contained sealed chamber with a permanent solution of water and anti-freeze sufficient not only to immerse and thereby protect replaceable electric heating elements but also provide the steam source during the steam generating process.

The heating elements are thermostatically dial controlled to provide precise temperatures throughout the range from slow simmer to rolling boil.

Each kettle is rigidly suspended on a horizontal shaft which is supported by, and allowed to rotate within the console housing thereby making it possible to tilt the kettle.

Removal of the food product occurs when the kettle is tilted and contents are directed by the pouring lip into an appropriate container.

All models are intended for permanent mounting to a counter top or suitable stand.

CAPACITIES

All EC models are suffixed with either -5, -6, -10 or -20 to indicate the capacity of that kettle in U.S. Gallons. Thus an EC-5 indicates an electric self steam generating jacketed counter top kettle with a capacity of 5 gallons (U.S.).

FUNCTIONING MODE

All CROWN electrically powered self steam generating kettles consist of a jacket containing a permanent solution of water and anti-freeze sufficient to completely immerse and protect replaceable electric heating elements. A low water sensing probe, as a protective device, is installed in each kettle jacket which will automatically interrupt heating element operation and turn on the WATER REQUIRED warning light whenever water level is insufficient to immerse not only the probe but also the elements.

FUNCTIONING MODE - continued

On all tilting kettles the low water sensing probe is installed at the rear of the kettle jacket and during the pouring operation, as the kettle is tilted forward, the water within the jacket also flows forward exposing the heating elements and the low water sensing probe and consequently interrupts power supply to the heating elements. Additionally, each tilting kettle has installed an interlock switch which will also interrupt the power supply to the heating elements whenever the kettle is not in its normal upright position, i.e. tilted.

When the Power Switch is turned ON and the Thermostat Knob dialed, simultaneously Temperature pilot light will glow and contactors will close to allow power to elements and steam generation will commence and continue until the water contained in the jacket reaches the thermostatic temperature, manually pre-selected, at which point the thermostat control will de-energize and open the contactors cutting off power to elements and Temperature pilot light will go off. When the temperature of the water in the jacket drops slightly, the cycle will repeat itself thus making it possible to maintain any selected precise cooking mode temperature.

The temperature required for the cooking process to function adequately must be greater than the boiling point of the liquid food product, viz. water. Further, the higher the temperature, the greater the steam pressure attained in the jacket and consequently the quicker the cooking process. For example, steam pressurized at 30 p.s.i. attains a temperature of 274°F.

It should be noted that since air is an unsuitable media through which heat may be transferred, it has been removed from the kettle jacket during testing at Crown. The Pressure Gauge should indicate vacuum pressure in the jacket of approximately 20 - 25 p.s.i. when the kettle is not in operation. The kettle jacket is intended to function at all times as a completely sealed self contained chamber and it is especially advisable not to trip the safety relief valve during inoperative periods since this will break the vacuum seal and allow air to enter the kettle jacket.

FIG. 1

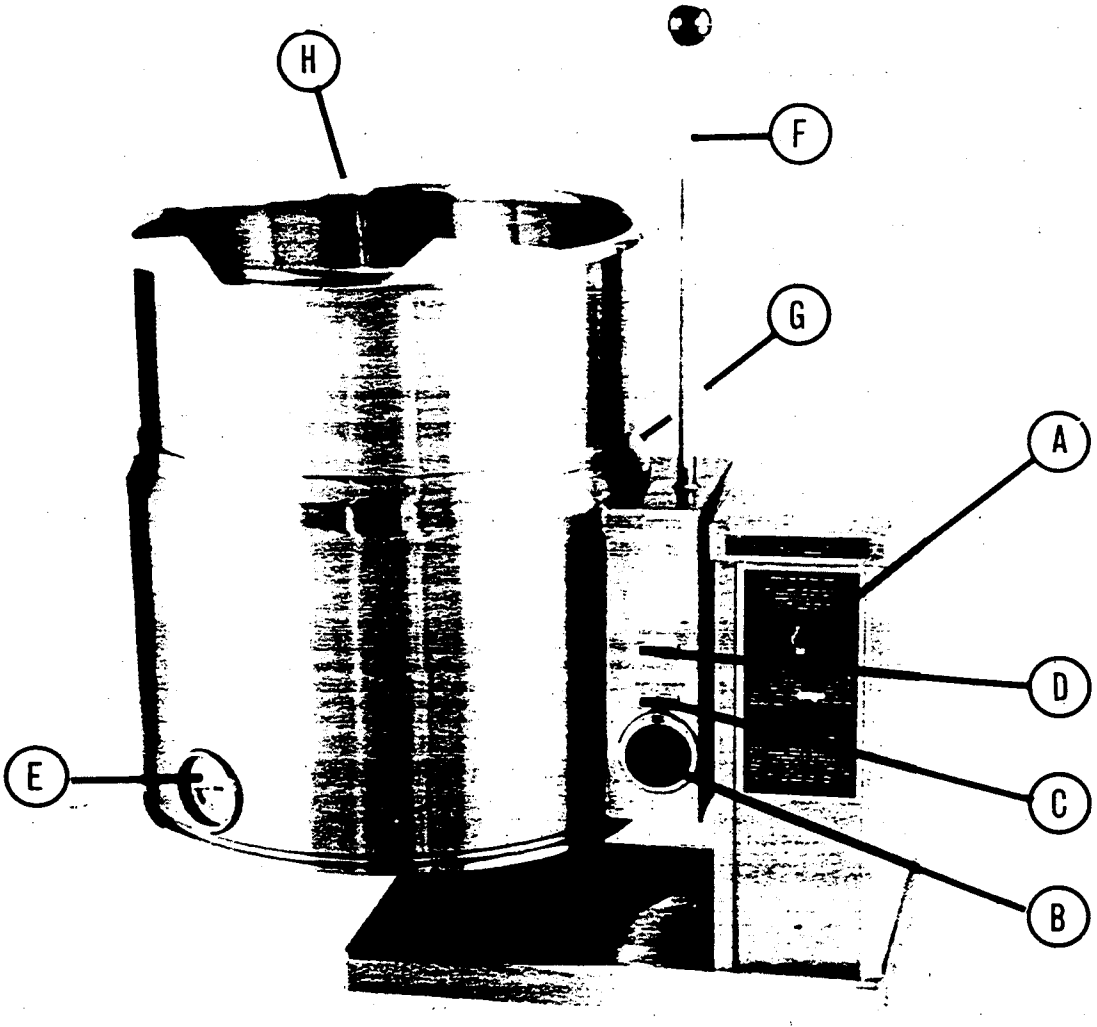


Fig. 1: Shows physical location of Controls, Indicators and Operating features. Listed and itemized is a short functional description of each.

Item A: Kettle Power Switch controls power to kettle.

Item B: Thermostat Knob allows operator to select kettle temperature in increments from "1" to '10'. Covers range from low simmer to rolling boil.

Item C: Temperature pilot light functions in conjunction with Thermostat Knob and when lit indicates heating elements are on. Cycles on and off according to thermostat control setting.

Item D: Water Required pilot light when lit indicates insufficient water in kettle jacket and protective sensing probe has interrupted power supply to controls and heating elements. Note that tilting of kettle will activate a similar condition but does not necessarily indicate a low water situation.

Item E: Pressure Gauge indicates vacuum in inches of mercury and pressure in pounds per square inch inside kettle jacket.

Item F: Tilting Handle used to tilt kettle forward for pouring.

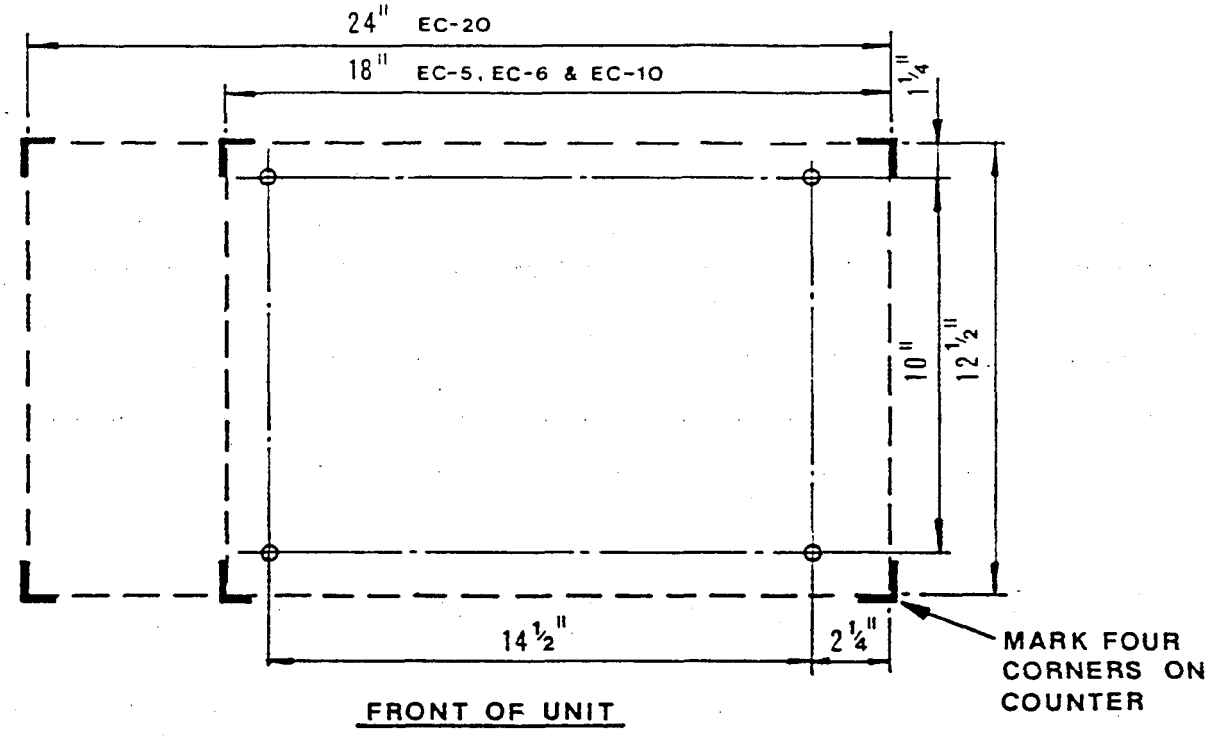
Item G: Safety Relief Valve located at rear of kettle jacket opens automatically should malfunction cause excessive steam pressure to occur in kettle jacket.

Item H: Air Vent Nut located at rear of kettle jacket allows air to be removed from jacket should vacuum seal be broken.

SECTION 3: SELF-GENERATING COUNTER TOP STEAM JACKETED KETTLES

a) Position kettle on counter allowing sufficient rear clearance from wall for kettle to tilt freely and completely without obstruction.

b) Mark four corner locations of kettle base. Refer to drawing below



c) Remove kettle from counter and locate position of 4 holes as per above drawing. Drill four 7/16" diameter holes.

d) Apply a continuous bead of Silastic or other equivalent sealant along the complete perimeter edge of the kettle base and reposition kettle on counter.

e) Use 5/16-18 Hex Cap Screws with suitable flat washers to bolt down.. Screw lengths must be 1-1/4" long plus counter top thickness. (EC-20 Counter Top Models require an additional 1/2" of bolt length).

f) Wipe off excess sealant

g) A Control Box with power supply equivalent to Electrical Rating of kettle should be located conveniently nearby.

h) A waterproof electrical connection for power supply to console housing must be provided.

i) Ground kettle to terminal provided inside console housing.

j) Turn power ON and check for proper operation.

SECTION 4: SELF-GENERATING COUNTER TOP STEAM JACKETED KETTLES

OPERATING PROCEDURE

a) Check that external Control Box Switch is ON.

b) Check kettle Pressure Gauge that reading indicates 20 - 25 vacuum for a cold kettle. If vacuum is insufficient. Air Venting Instructions must be followed.

c) Place Kettle Power Switch in ON position.

d) Preheat kettle by turning Thermostat Knob to '8' and wait until Temperature pilot light goes off.

NOTE: Food products with milk or egg base should be placed into cold kettle and then the cooking operation begun. Avoid sudden contact of these food products to hot kettle bowl surface since caking and adhering will occur.

e) Place food product into kettle bowl.

f) Adjust Thermostat Knob to temperature cooking mode. Setting of 4 - 6 will provide simmer and 7-10 low to rolling boil.

g) Turn both kettle Power Switch and Thermostat Knob OFF when cooking has been completed.

h) Remove food product by ladling out of kettle bowl or by tilting and pouring into a suitable container.

i) Clean immediately to prevent residue from drying and adhering to kettle bowl surface.

CLEANING PROCEDURE

a) Turn power supply OFF to kettle.

b) Using a nylon brush, scrub kettle bowl with a warm water mild detergent wash solution. Never use steel wool or abrasive scouring pads as they will scratch and ruin the general appearance of the kettle and make it more difficult subsequently to maintain in a clean sanitary condition.

c) Tilt kettle and pour out wash solution.

d) Rinse kettle bowl with clean water and dry.

e) Food adhering excessively to bowl surface may be loosened by allowing water to soak in bowl at a low temperature setting.

f) Wipe down exterior of kettle and console housing with clean damp cloth.

NEVER SPRAY WATER INTO ELECTRIC CONTROLS

SECTION 5: SELF-GENERATING COUNTER TOP STEAM JACKETED KETTLES

GENERAL MAINTENANCE

No general maintenance is required other than adhering to the Cleaning Procedure instructions on page 7.

LOW WATER LEVEL

Proper water level must be maintained within the jacket for the kettle to operate. Depletion of water may occur from excessive opening of, or leakage through the safety relief valve.

If water is below required operating level, either initially at startup or during use, the kettle will automatically shut off, refuse to operate and the LOW WATER signal light will come on.

In order for the kettle to operate, the following procedure must be followed -

a) Trip the safety relief valve lever to relieve all pressure from kettle jacket.

b) At exterior rear of kettle jacket remove nut from Air Vent.

c) Insert funnel into Air Vent opening and slowly add the indicated amount of clean water for

EC-5 and EC-6 Models add 52 ozs.

EC-10 Model add 108 ozs.

EC-20 Model add 144 ozs.

d) Replace Air Vent nut.

e) Follow Air Venting Instructions below.

f) Continue normal Operating Procedure of kettle.

AIR VENTING INSTRUCTIONS

Periodically check Pressure Gauge when the kettle is cold. Reading should be in VACUUM zone between 20 to 25, otherwise air is present and efficient heating will not occur.

To remove air, set Thermostat Knob at 8 and heat empty kettle until TEMPERATURE pilot tight goes off.

Open Air Vent nut one full turn for 10 seconds to exhaust air from kettle jacket.

Close Air Vent nut.

EXTREMELY SLOW COOKING TIME

If the cooking time is abnormally slow then the difficulty may be due to air being present in the kettle jacket. To remove air, follow AIR VENTING INSTRUCTIONS on page 8.

If this problem persists and kettle will not reach and maintain Pressure Gauge zone of 20 - 25 Vacuum when cold, then assume that a slow leak may be responsible in the jacket. Check all fitting connections to jacket and also element gasket. Tighten or replace if necessary.

Slow cooking time may also be due to a burnt out heating element. Test elements and if defective replace complete element assembly.

KETTLE WILL NOT OPERATE WHEN TURNED ON

Check that power supply is available to kettle.

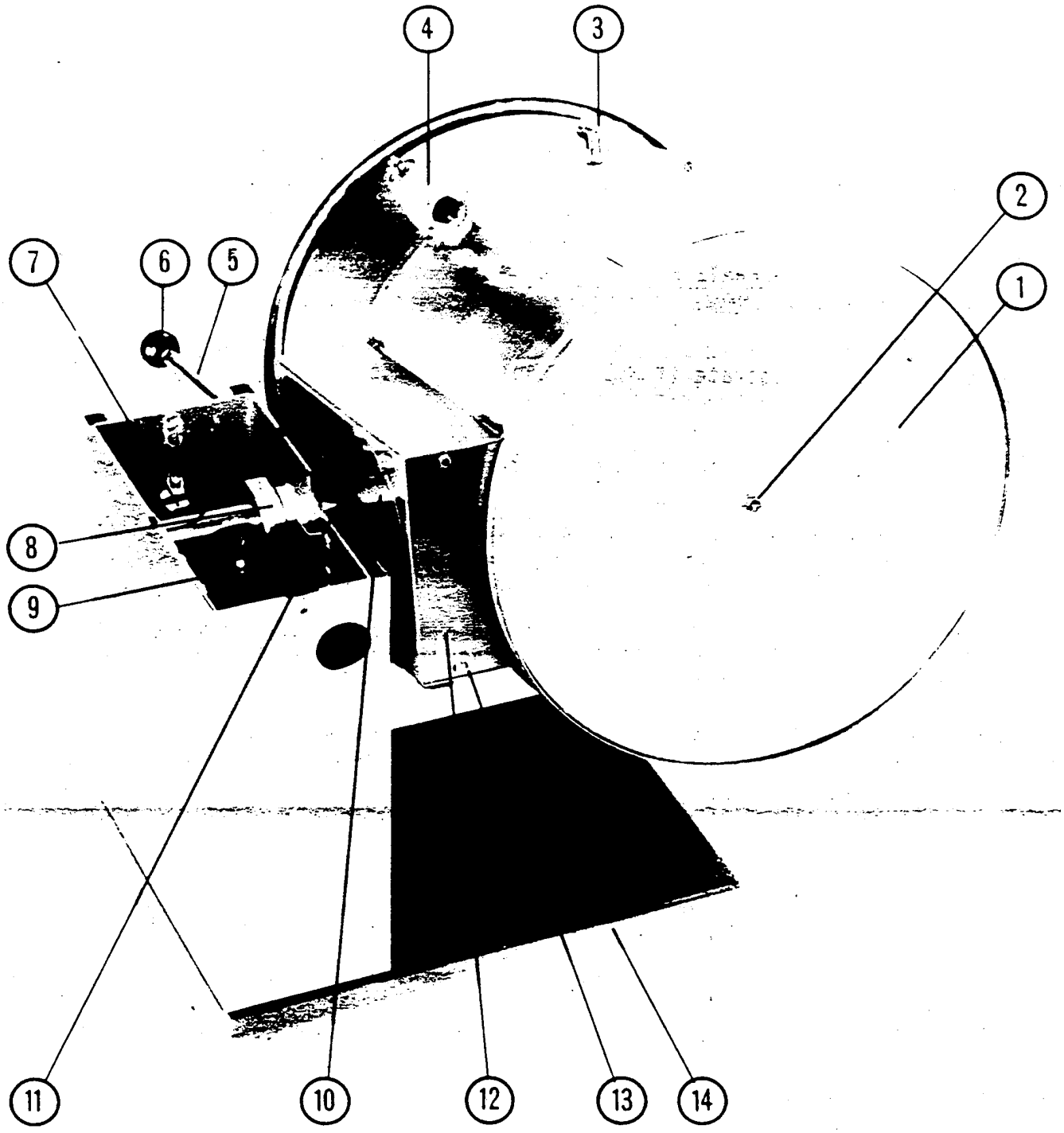
Kettle will not operate if water level is inadequate in jacket. Follow LOW WATER LEVEL instructions on page 8.

If water level is sufficient and kettle refuses to operate, then check that Interlock Switch in Console is fully engaged when kettle is in its normally upright position. Adjust Retaining Collar if necessary to assure complete contact with switch and if kettle still refuses to operate, then check for defective switch and/or loose wiring connections.

Initially, when Termostat Knob is dialed and TEMPERATURE indicator light does not come on, then it may be assumed that malfunction is due to either a defective Thermostat or loose wiring connection(s). If TEMPERATURE indicator light comes on when Thermostat Knob is dialed fully (i.e. setting of '10'). then eventually the kettle should reach its maximum temperature (290°F) in the jacket and a corresponding pressure reading of approximately 40 p.s.i. should be evident on the Pressure Gauge, (on kettles, rated,at 50-p.s.i)

Finally, when the kettle is turned ON and Thermostat Knob dialed, check that the Contactors.are being energized and power is being made available to the heating elements. Replace defective Contactors.

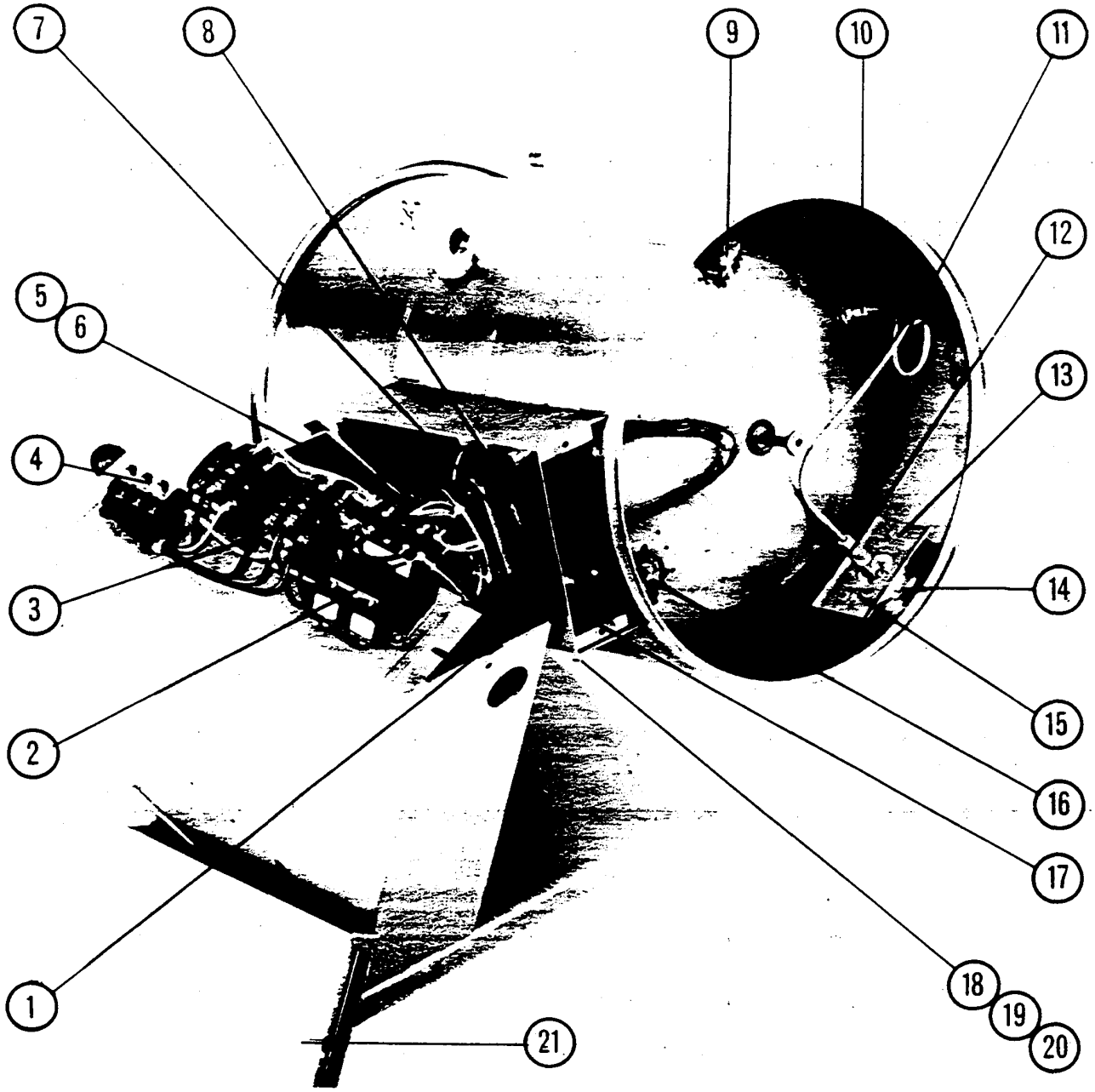
FIG. 2



From Fig. 2

ITEM NO.	PART NO.			DESCRIPTION	QUANTITY
	EC-5&-6	EC-10	EC-20		
1	8-3090	8-3091	8-3120	Kettle Enclosure Cover	1
2	1-65S4	1-65S4	1-65S4	Enclosure Cover Bolt	1
3	3-AV01	3-AV01	3-AV01	Air Vent Assembly	1
4	3-SRV8	3-SRV8	3-SRV8	Safety Relief Valve (50 psi)	1
5	8-3092	8-3092	8-3142	Tilt Handle	1
6	2-KB01	2-KB01	2-KB01	Knob for Handle	1
7	4-S101	4-S101	4-S101	Power Switch	1
8	8-3087	8-3087	8-3087	Retaining Collar	1
9	4-M605	4-M605	4-M605	Interlock Switch	1
	1-11 C7	1-11C7	1-11C7	Fastening Screws for Item 9	2
10	8-3103	8-3103	8-3103	Element Access Cover	1
n	1-33S2	1-33S2	1-33S2	Access Cover Screws	2
12	8-3028	8-3029	8-3119	Trunnion Box Cover	1
13	1-33S2	1-33S2	1-33S2	Trunnion Box Screws	2
14	8-3143	8-3144	8-3145	Housing & Base Assembly	1

FIG. 3



From Fig. 3

ITEM NO.	PART NO.			DESCRIPTION	QUANTITY
	EC-5&-6	EC-10	EC-20		
1	4-70EU	4-70EU	4-70EU	Ground Terminal	1
2	4-LLC1	4-LLC1	4-LLC1	Liquid Level Control	1
3	4-NG41	4-NG41	4-NG41.	Contactor 208,240(2)380,416,480 (1)	
4	4-33T8	4-33T8	4-33T8	Terminal Block	1
5	1-65S6	1-65S6	1-65S6	Flange Bolt	4
6	1-60S0	1-60S0	1-60S0	Lock Washer	4
7	8-3146	8-3147	8-3147	Gasket	1
8		see page 14		Element & Flange Assembly	1
9	4-LLP1	4-LLP1	4-LLP1	Probe	1
10	3-68CC	3-68CC	3-68CC	Connector	1
11	8-3148	8-3149	8-3150	Copper Tube	1
12	3-66CB	3-66CB	3-66CB	Connector	1
13	1-49CO	1-49CO	1-49CO	Nut	2
14	3-PG00	3-PG00	3-P600	Pressure Gauge	1
15	8-3097	8-3097	8-3097	Mounting Plate	1
16	3-T8EC	3-T8EC	3-T8EC	Thermostat Bulb Connector	1
17	4-TH05	4-TH05	4-TH05	Thermostat	1
18	4-TK05	4-TK05	4-TK05	Thermostat Knob (not shown)	1
19	4-TB05	4-TB05	4-TB05	Thermostat Bezel (not shown)	1
20	1-13C3	1-13C3	1-13C3	Thermostat Screws (not shown)	1
21	8-3015	8-3015	8-3015	Console Lid	1
22	1-33S2	1-33S2	1-33S2	Console Screw (not shown)	1
23	4-PL08	4-PL08	4-PL08	Low Water Pilot Light (n.s.)	1
24	4-PL08	4-PL08	4-PL08	Temperature Pilot Light (n.s.)	1

Ref. Page 11 - Item 22

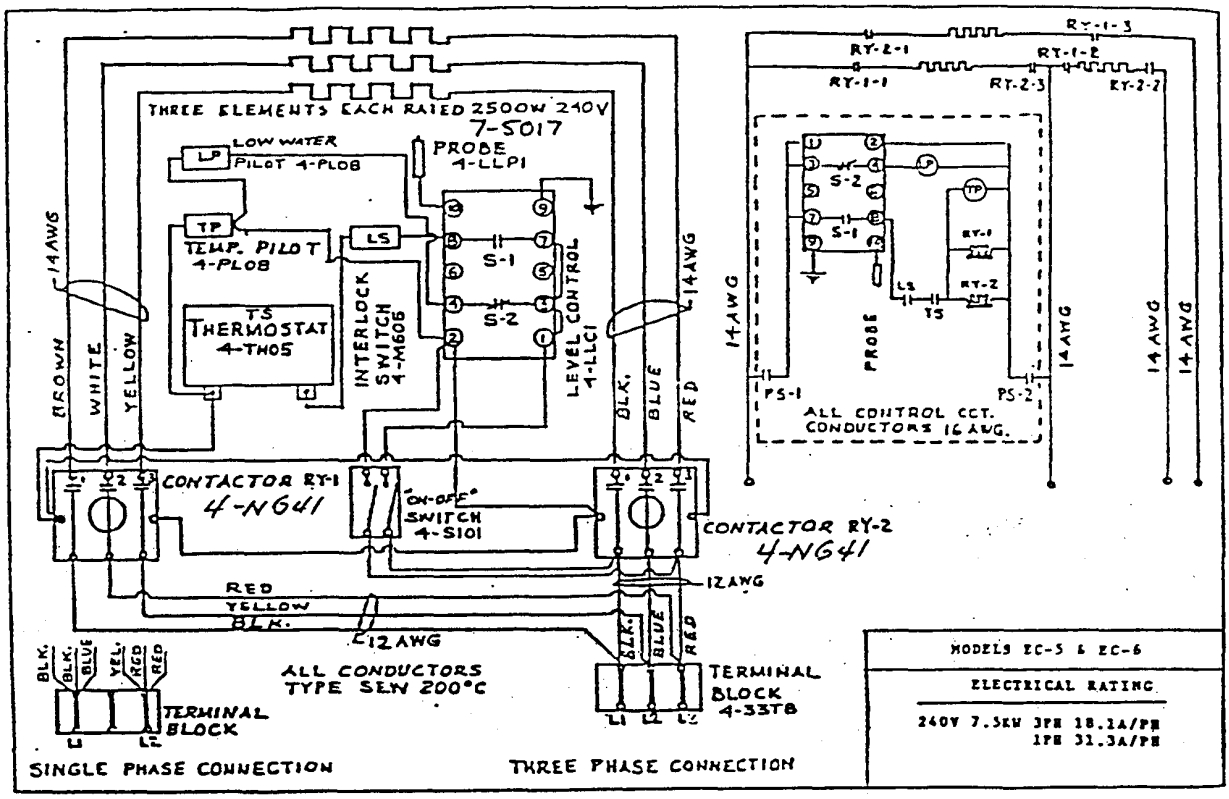
MODELS EC-5 & EC-6 (7.5 KH Elements)

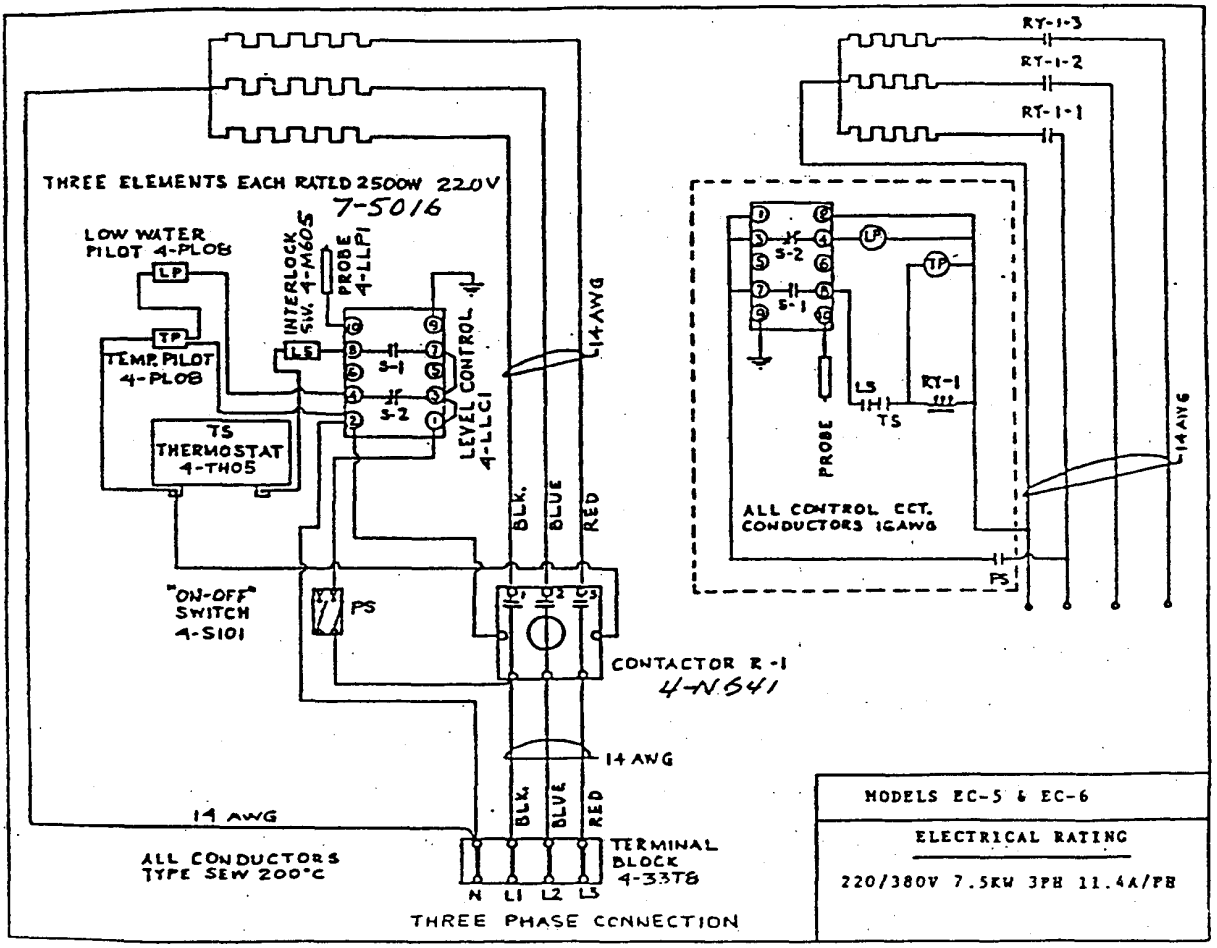
VOLTAGE	ELEMENT NO.	TRANSFORMER NO.
208	7-5015	not required
230	7-5045	not required
240	7-5017	not required
220/380	7-5016	not required
240/416	7-5017	not required
380	7-5016	4-T251 *
416	7-5017	4-T253 *
480	7-5018	4-T255 *

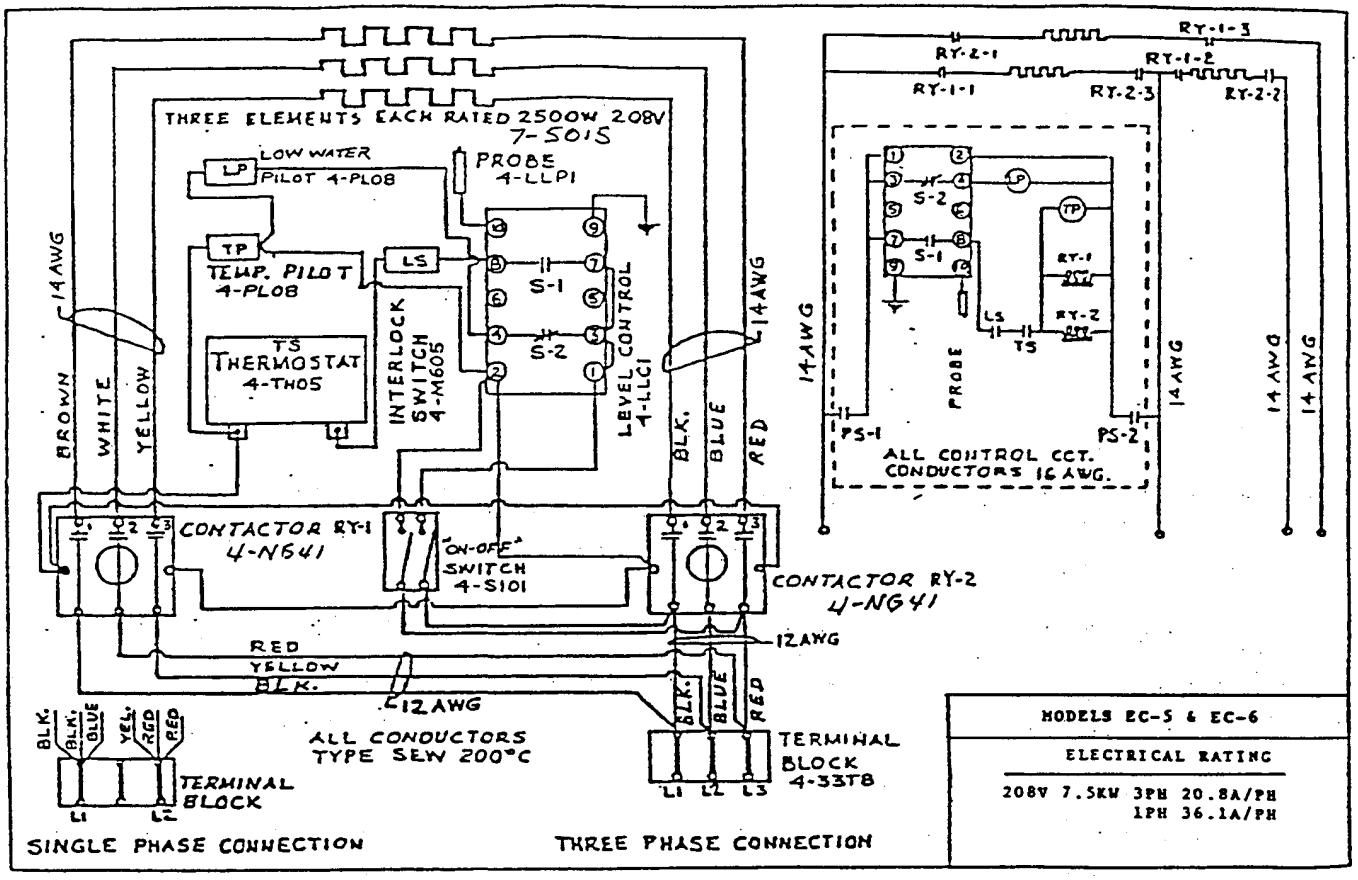
MODELS EC-10 & EC-20 (12 KW Elements)

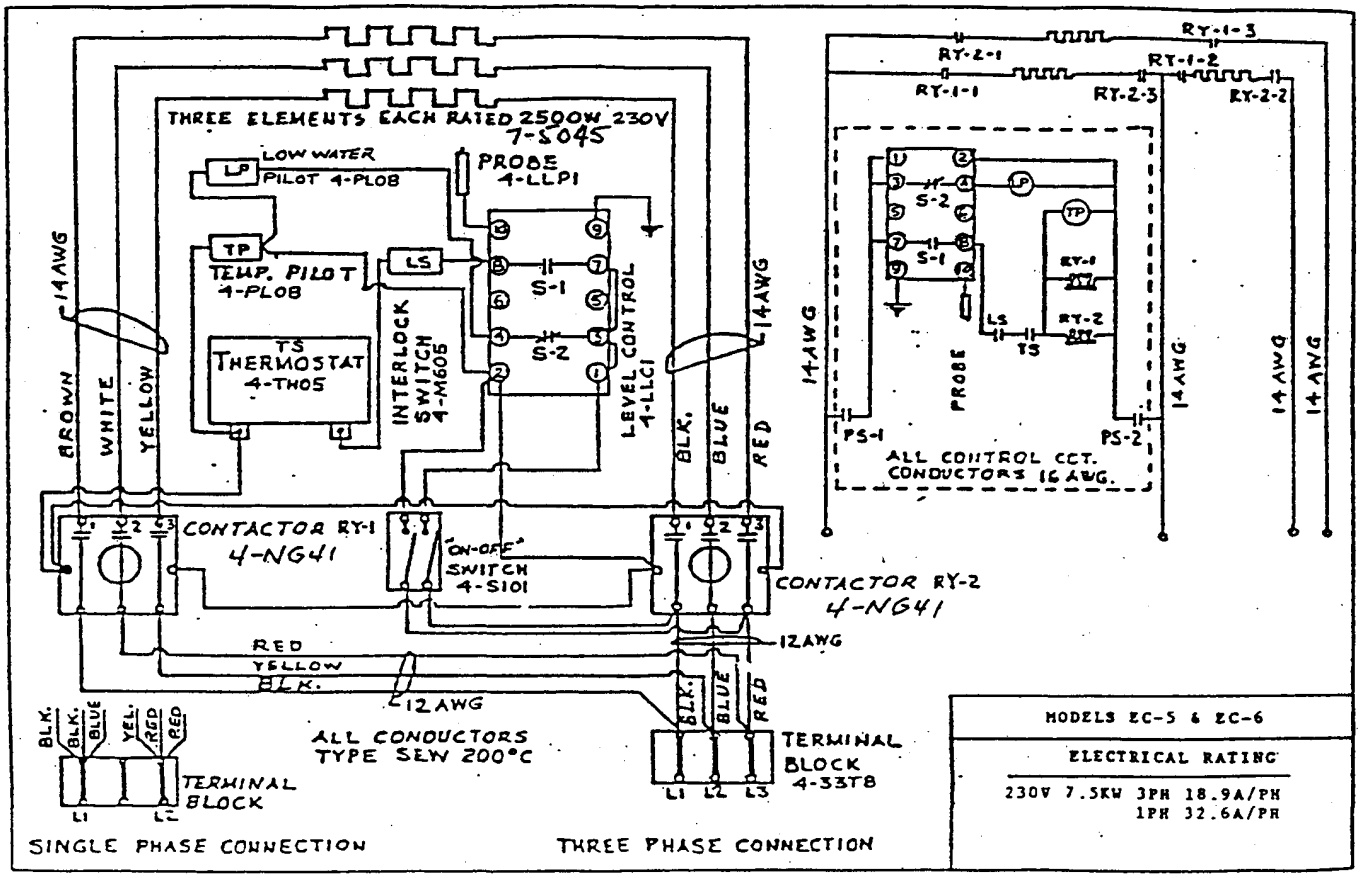
VOLTAGE	ELEMENT NO.	TRANSFORMER NO.
208	7-5019	not required
230	7-5046	not required
240	7-5021	not required
220/380	7-5020	not required
240/416	7-5021	not required
380	7-5020	4-T251 *
416	7-5021	4-T253 *
480	7-5022	4-T255 *

* Require Fuse Part No. 4-FU03 and Fuseholder Part No. 4-FH03

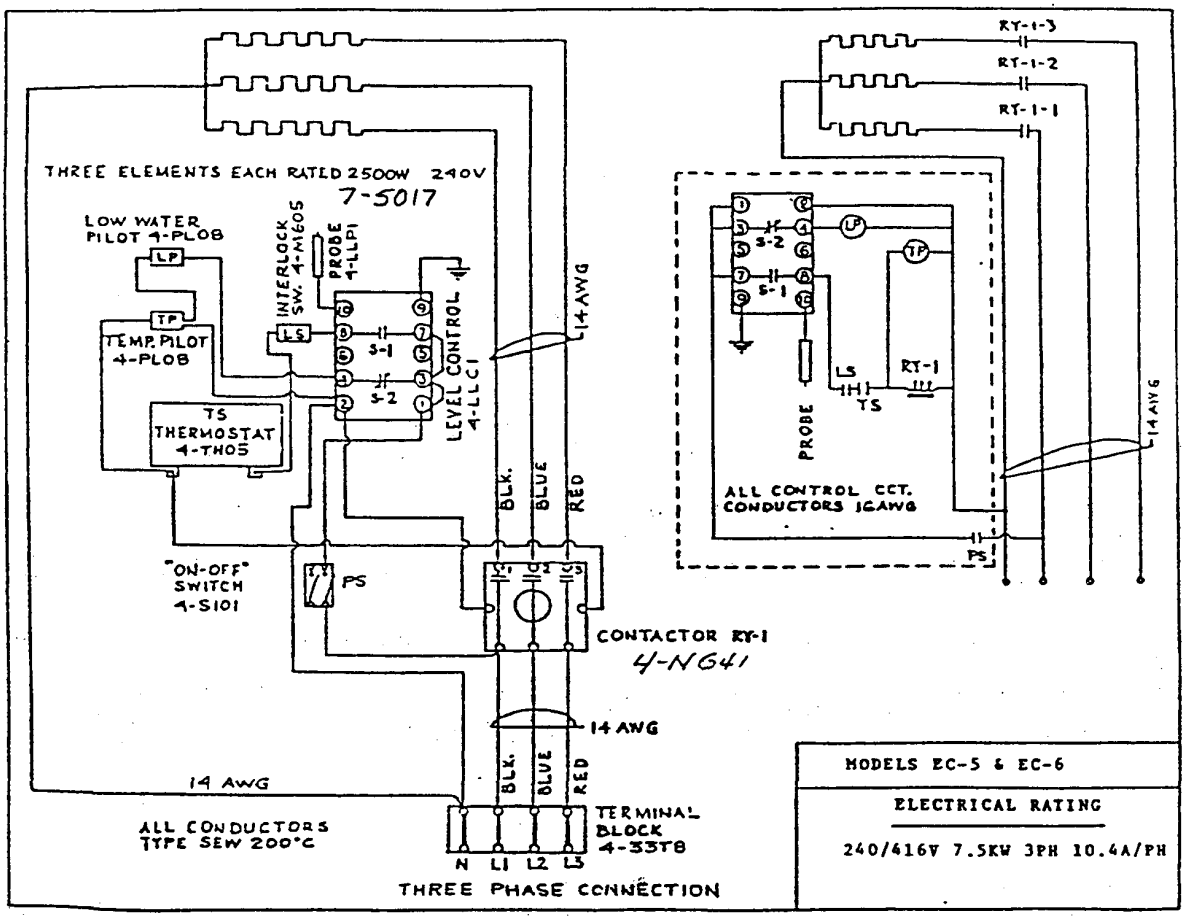

THREE ELEMENTS EACH RATED 2500W 240V
7-5017
LOW WATER PILOT 4-PLOB
PROBE 4-LLP1
TEMP. PILOT 4-PLOB
TS THERMOSTAT 4-THOS
INTERLOCK SWITCH 4-M60S
LEVEL CONTROL 4-LLC1
S-1
S-2
LS
LP
TP
14AWG
BROWN
WHITE
YELLOW
BLK.
BLUE
RED
CONTACTOR RY-1 4-N641
"ON-OFF" SWITCH 4-S101
CONTACTOR RY-2 4-N641
12AWG
ALL CONDUCTORS TYPE SEW 200°C
TERMINAL BLOCK
TERMINAL BLOCK 4-33TB
SINGLE PHASE CONNECTION
THREE PHASE CONNECTION
RY-1-3
RY-2-1
RY-1-2
RY-1-1
RY-2-3
RY-2-2
RY-1
RY-2
PROBE
PS-1
PS-2
ALL CONTROL CCT. CONDUCTORS 16 AWG.
MODELS EC-5 & EC-6
ELECTRICAL RATING
240V 7.5KW 3PH 18.1A/PH
1PH 31.3A/PH

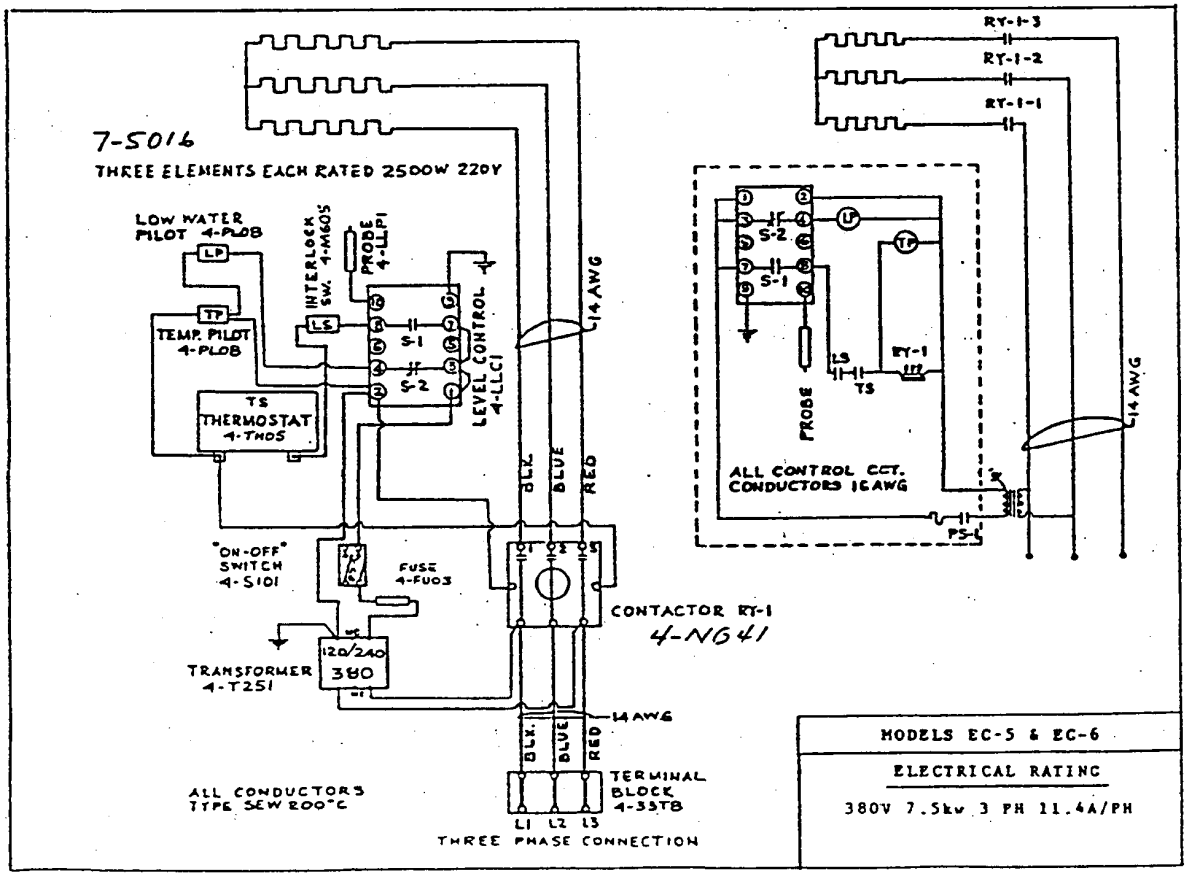

THREE ELEMENTS EACH RATED 2500W 220V
7-5016
LOW WATER PILOT 4-PLOB
INTERLOCK SW. 4-M60S
PROBE 4-LLP1
TEMP. PILOT 4-PLOB
TS THERMOSTAT 4-THOS
LEVEL CONTROL 4-LLC1
S-1
S-2
LS
LP
TP
14AWG
BLK.
BLUE
RED
"ON-OFF" SWITCH 4-S101
PS
CONTACTOR R-1 4-N641
14 AWG
ALL CONDUCTORS TYPE SEW 200°C
TERMINAL BLOCK 4-33TB
N L1 L2 L3
THREE PHASE CONNECTION
RY-1-3
RY-1-2
RY-1-1
RT-1
PROBE
ALL CONTROL CCT. CONDUCTORS 16AWG
MODELS EC-5 & EC-6
ELECTRICAL RATING
220/380V 7.5KW 3PH 11.4A/PH


THREE ELEMENTS EACH RATED 2500W 208V
7-5015
LOW WATER
PILOT 4-PL08
LP
PROBE
4-LLP1
TP
TEMP. PILOT
4-PL08
LS
TS
THERMOSTAT
4-TH05
INTERLOCK
SWITCH
4-M605
S-1
S-2
LEVEL CONTROL
4-LLC1
14AWG
BROWN
WHITE
YELLOW
BLK.
BLUE
RED
CONTACTOR RY-1
4-NG41
"ON-OFF"
SWITCH
4-S101
CONTACTOR RY-2
4-NG41
12AWG
RED
YELLOW
BLK.
ALL CONDUCTORS
TYPE SEW 200°C
TERMINAL
BLOCK
TERMINAL
BLOCK
4-33T8
L1 L2
L1 L2 L3
SINGLE PHASE CONNECTION
THREE PHASE CONNECTION
RY-1-3
RY-2-1
RY-1-2
RY-1-1
RY-2-3
RY-2-2
PROBE
PS-1
PS-2
ALL CONTROL CCT.
CONDUCTORS 16 AWG.
MODELS EC-5 & EC-6
ELECTRICAL RATING
208V 7.5KW 3PH 20.8A/PH
1PH 36.1A/PH

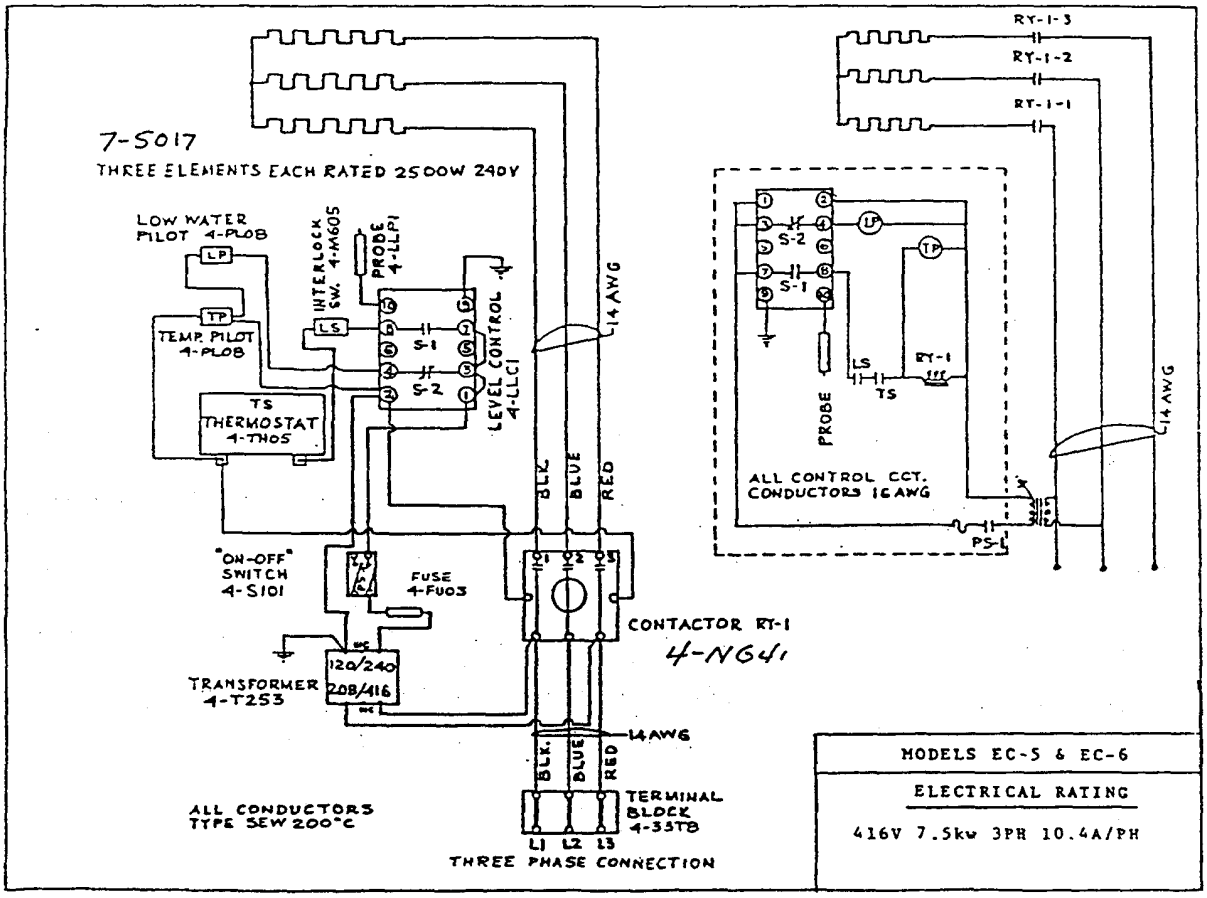

THREE ELEMENTS EACH RATED 2500W 230V
7-5045
LOW WATER
PILOT 4-PL08
LP
PROBE
4-LLP1
TP
TEMP. PILOT
4-PL08
LS
TS
THERMOSTAT
4-TH05
INTERLOCK
SWITCH
4-M605
S-1
S-2
LEVEL CONTROL
4-LLC1
14AWG
BROWN
WHITE
YELLOW
BLK.
BLUE
RED
CONTACTOR RY-1
4-NG41
"ON-OFF"
SWITCH
4-S101
CONTACTOR RY-2
4-NG41
12AWG
RED
YELLOW
BLK.
ALL CONDUCTORS
TYPE SEW 200°C
TERMINAL
BLOCK
TERMINAL
BLOCK
4-33T8
L1 L2
L1 L2 L3
SINGLE PHASE CONNECTION
THREE PHASE CONNECTION
RY-1-3
RY-2-1
RY-1-2
RY-1-1
RY-2-3
RY-2-2
PROBE
PS-1
PS-2
ALL CONTROL CCT.
CONDUCTORS 16 AWG.
MODELS EC-5 & EC-6
ELECTRICAL RATING
230V 7.5KW 3PH 18.9A/PH
1PH 32.6A/PH

SECTION 8: MODELS EC-5 & EC-6

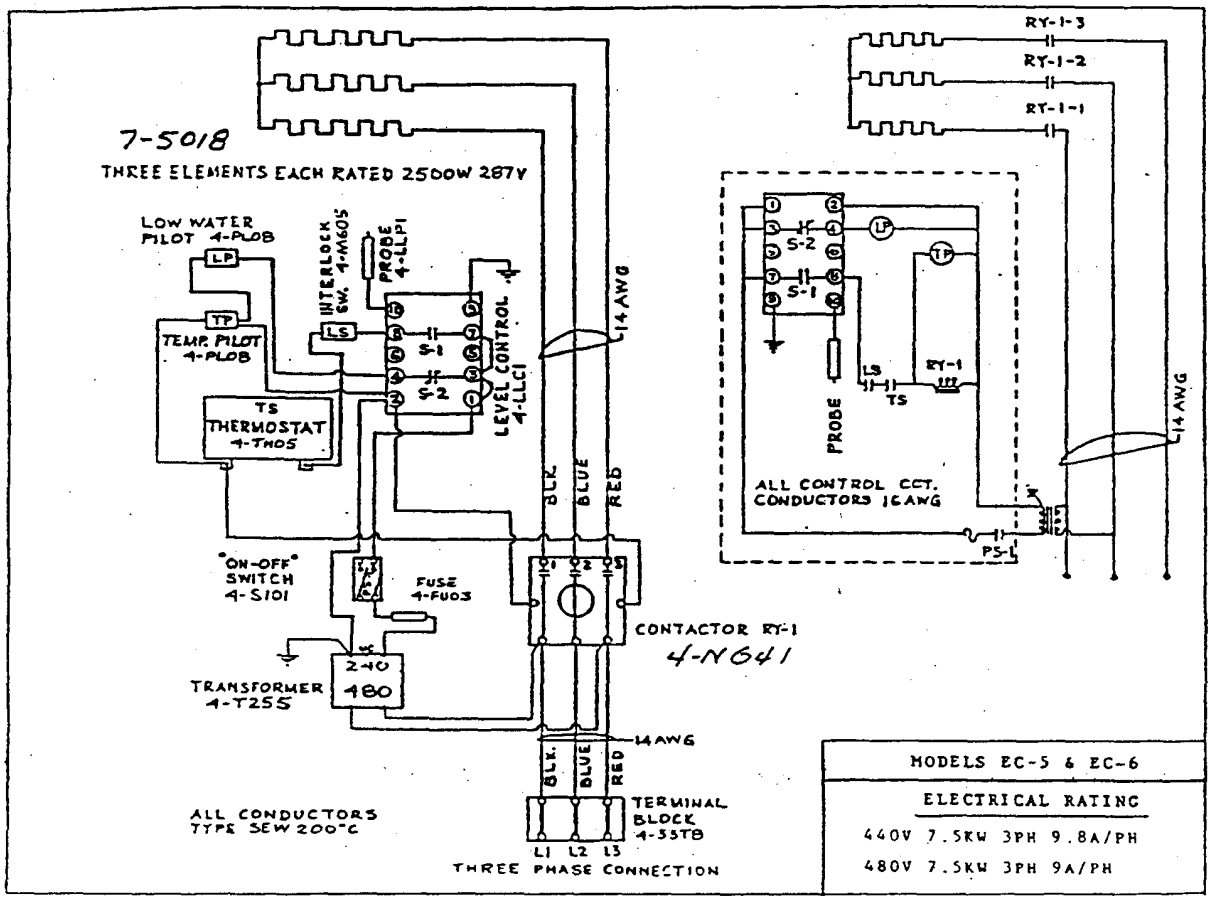




SECTION 8: MODELS EC-5 & EC-6

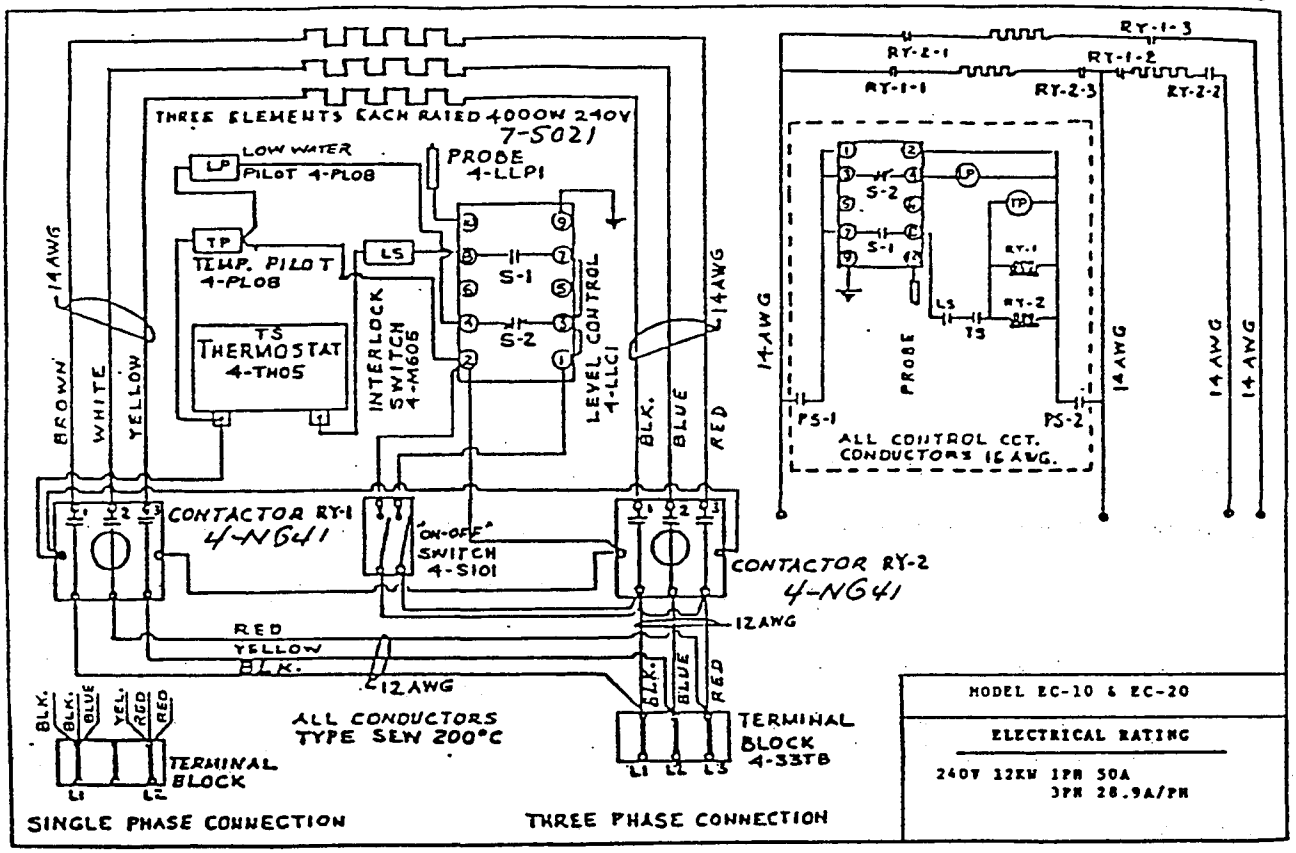


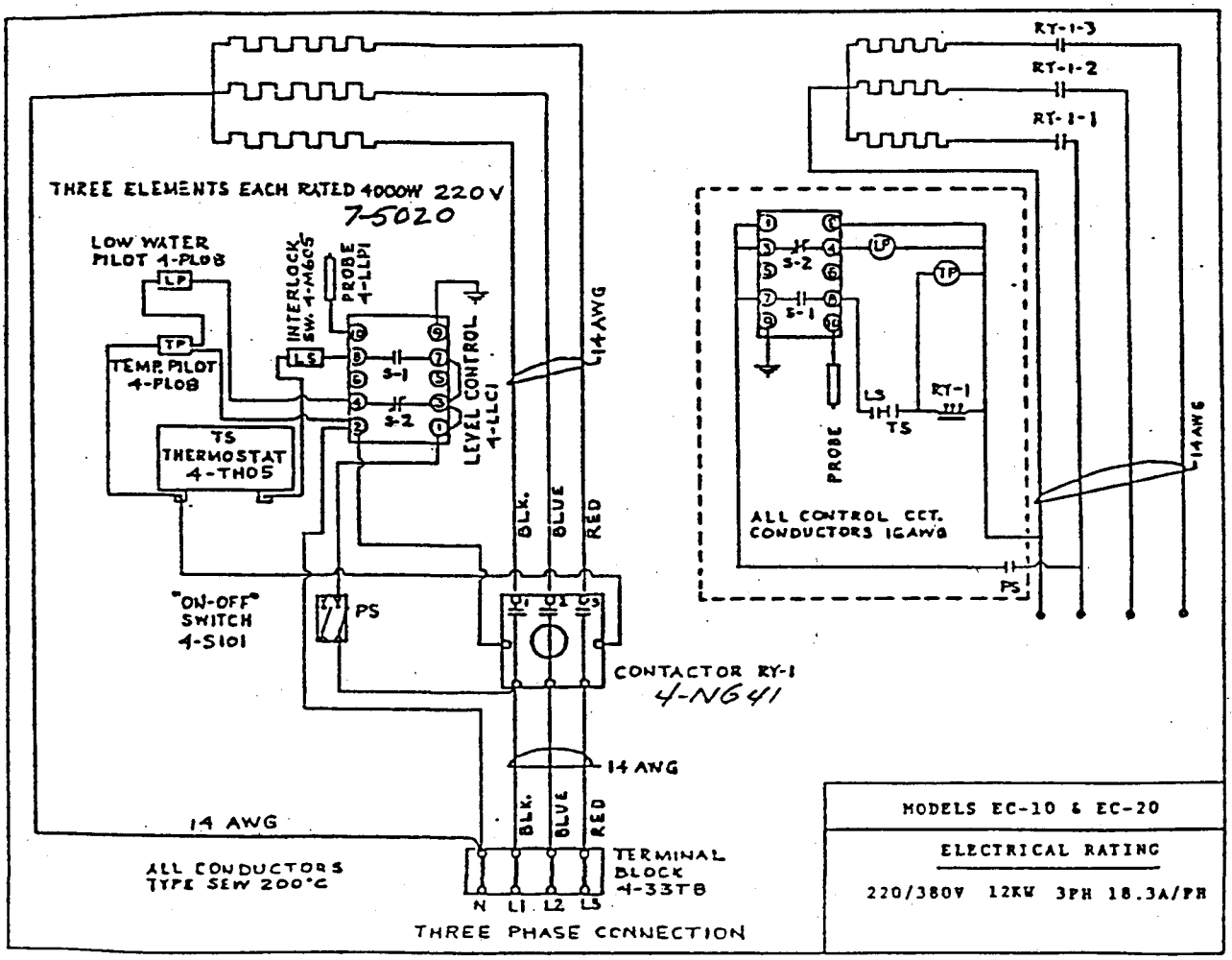
MODELS EC-5 & EC-6
ELECTRICAL RATING
416V 7.5kw 3PH 10.4A/PH



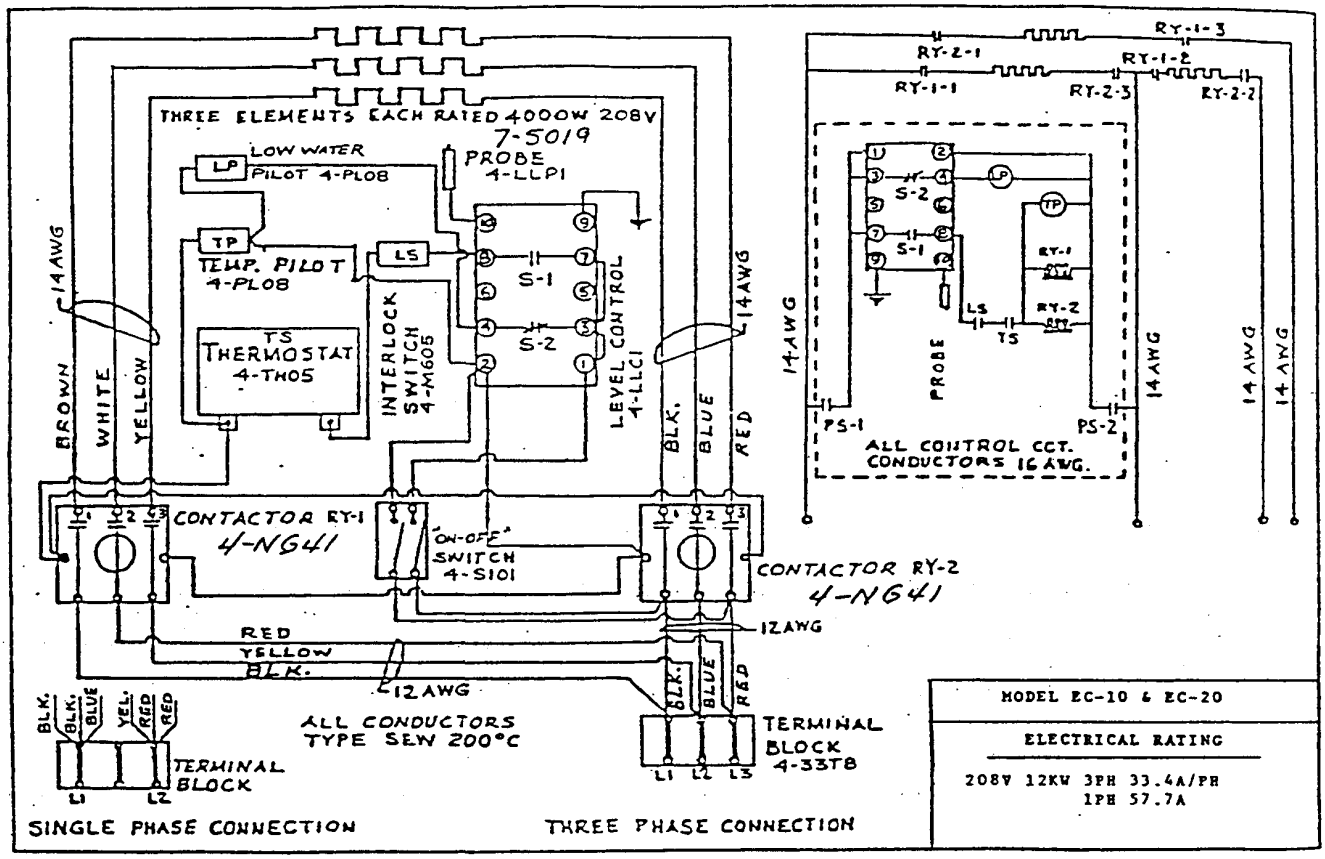
MODELS EC-5 & EC-6
ELECTRICAL RATING
440V 7.5KW 3PH 9.8A/PH
480V 7.5KW 3PH 9A/PH

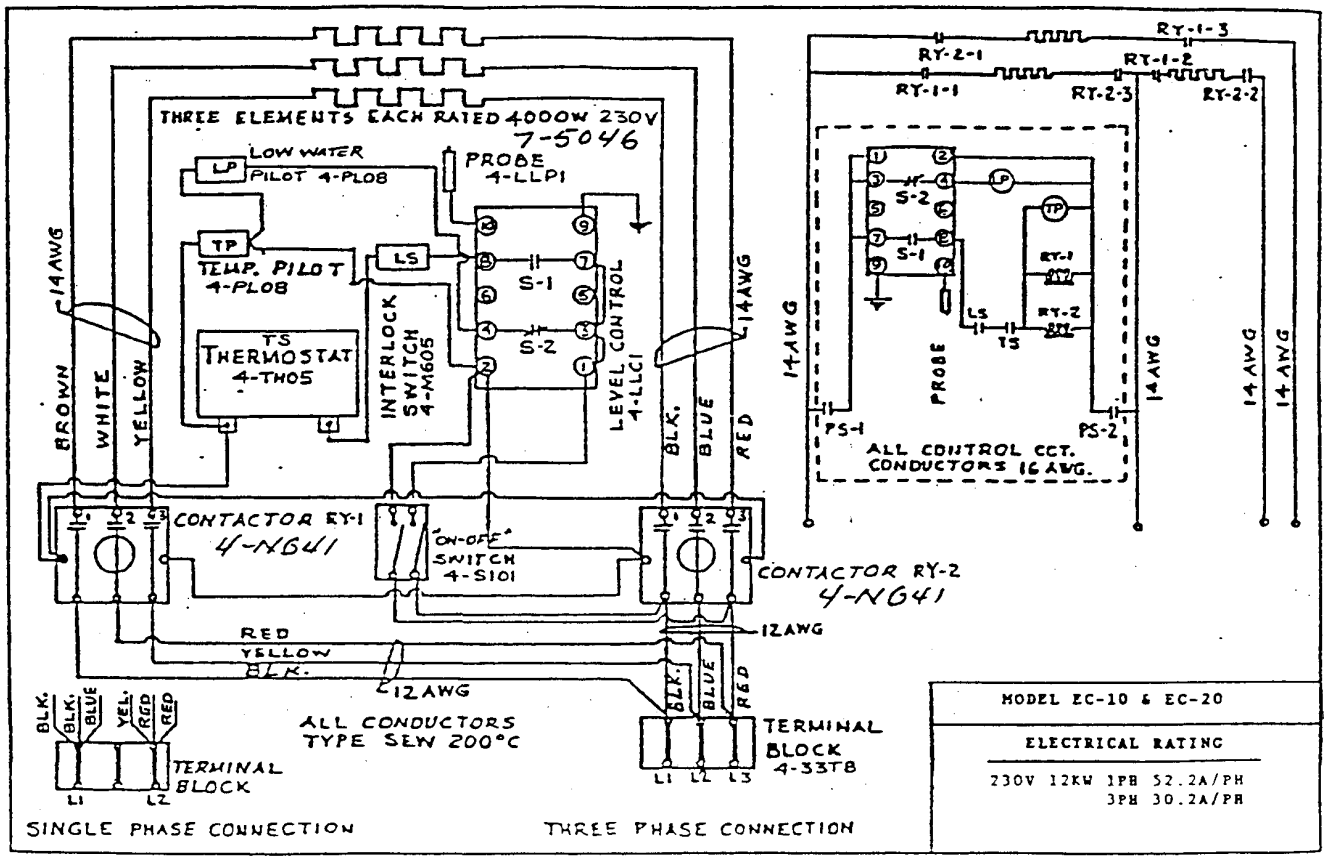
SECTION 8: MODESL EC-10 & EC-20



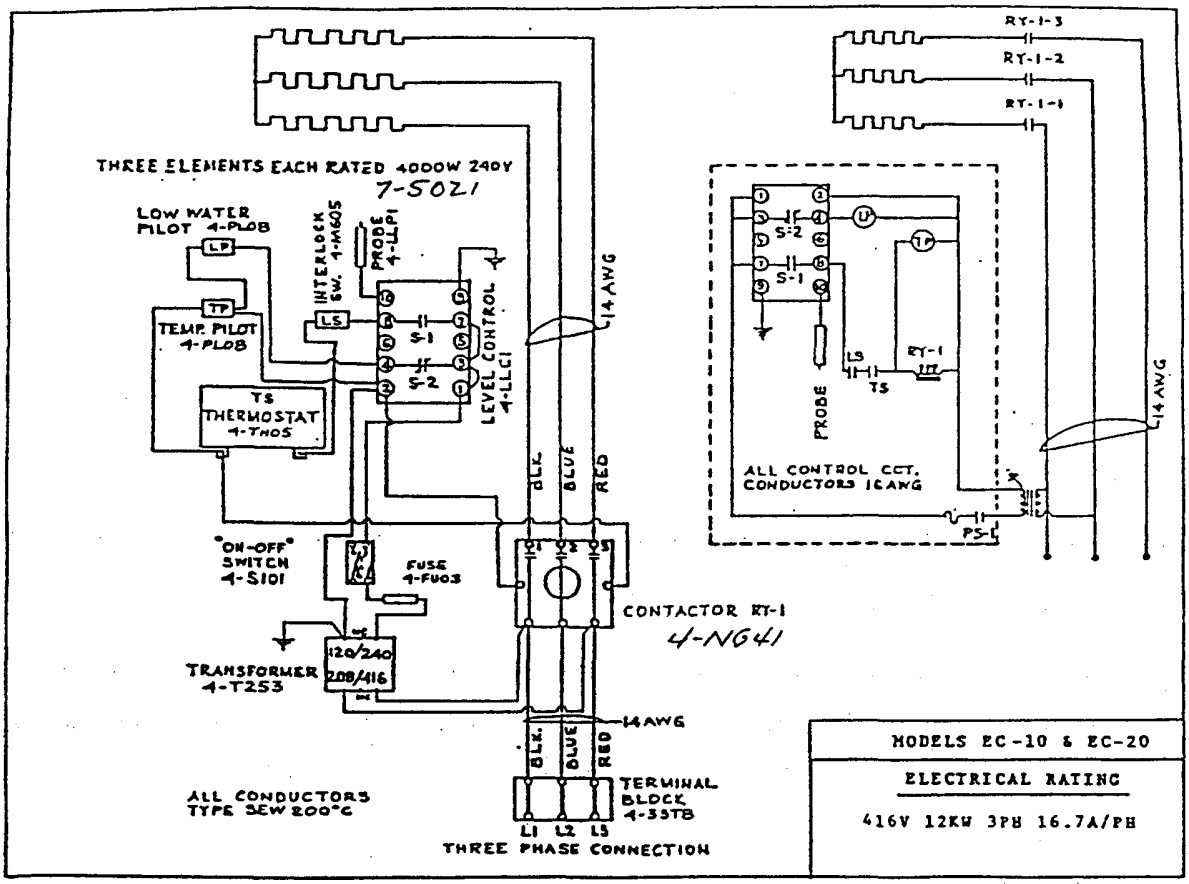


SECTION 8: MODELS EC-10 & EC-20

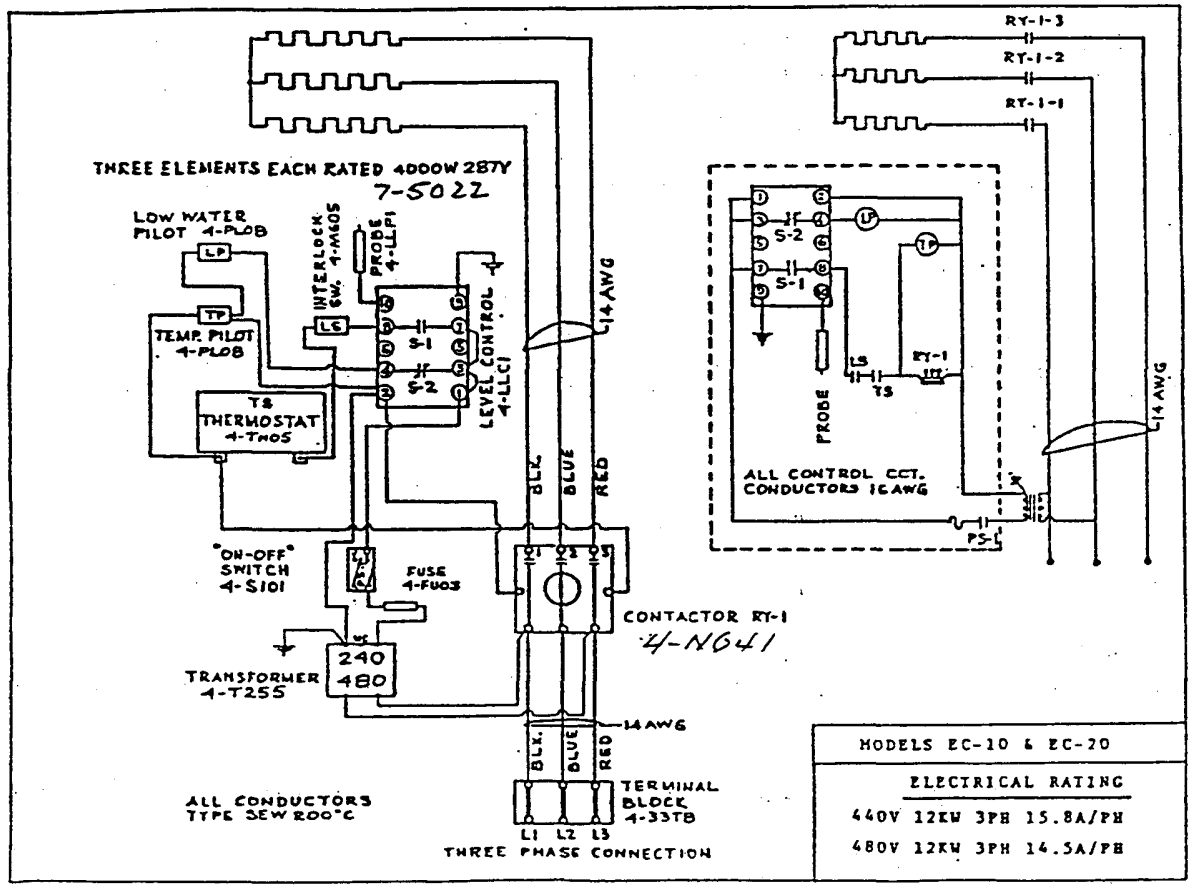




SECTION 8: MODELS EC-10 & EC-20

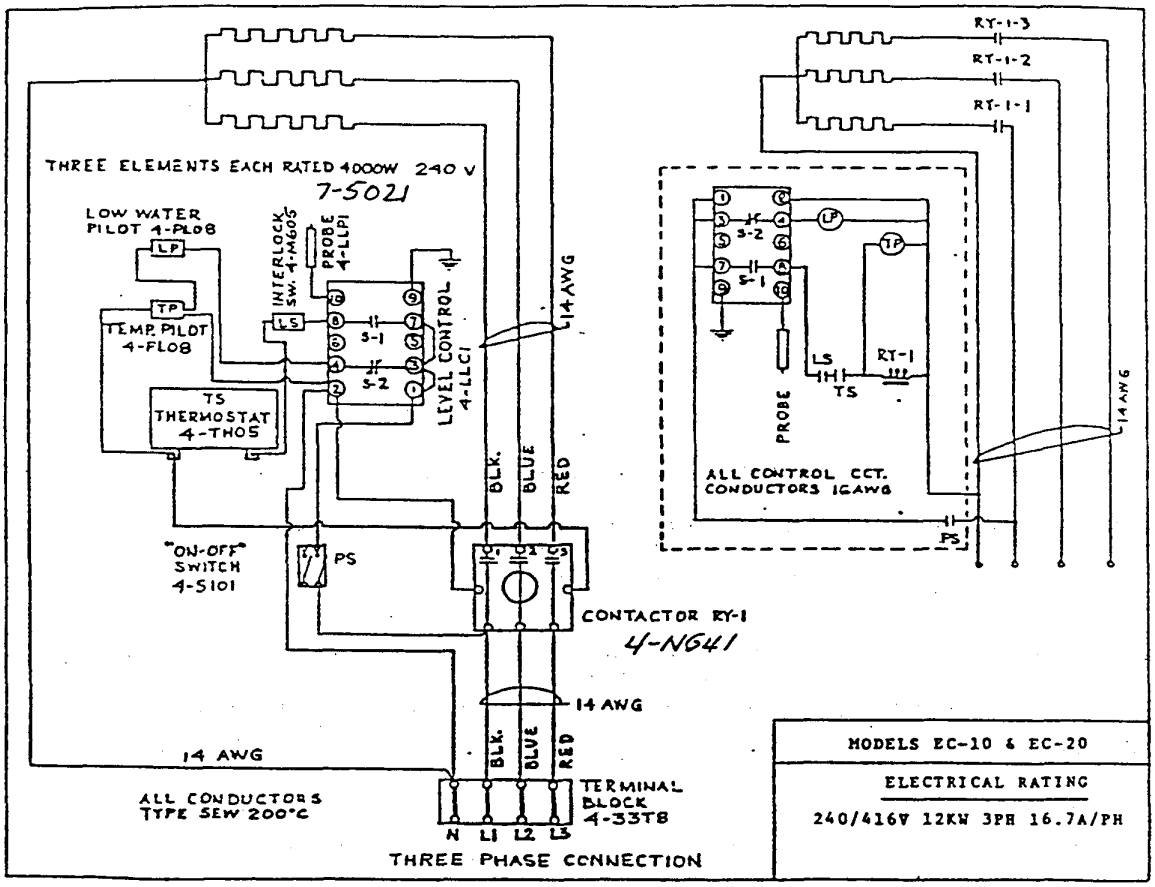


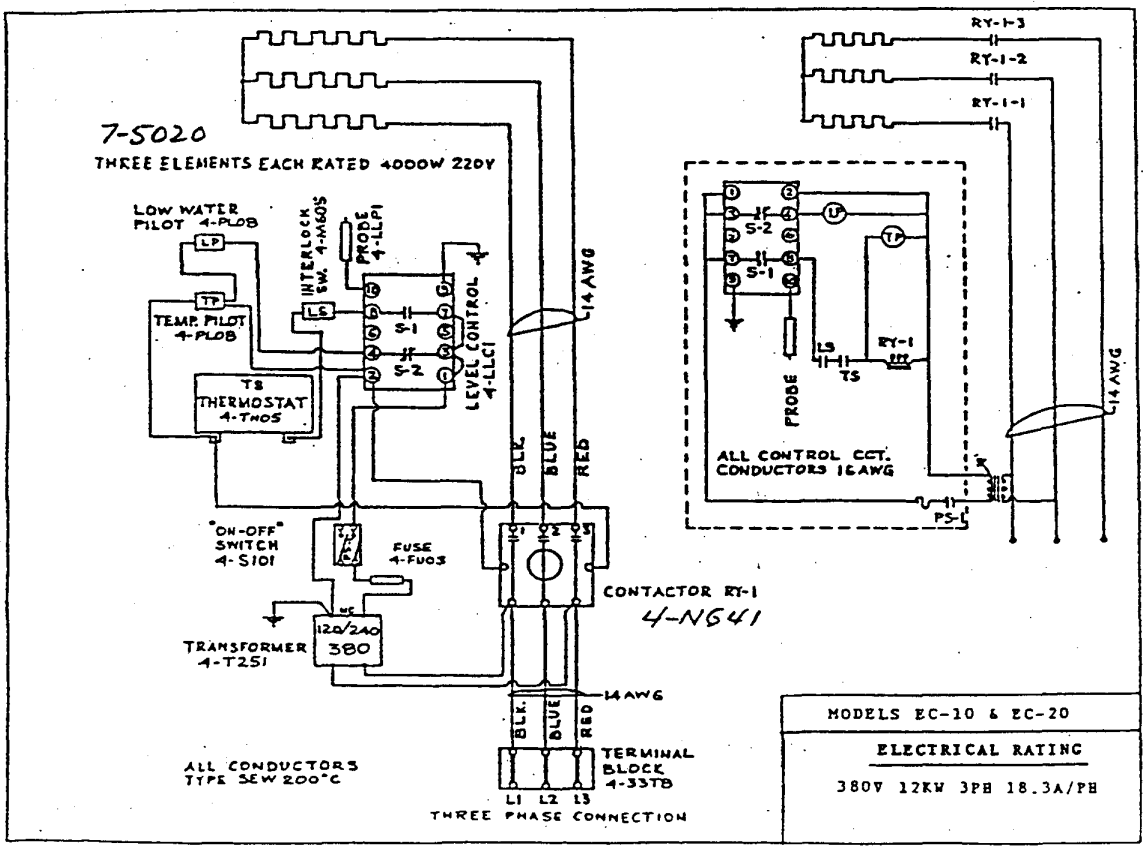
MODELS EC-10 & EC-20
ELECTRICAL RATING
416V 12KW 3PH 16.7A/PH

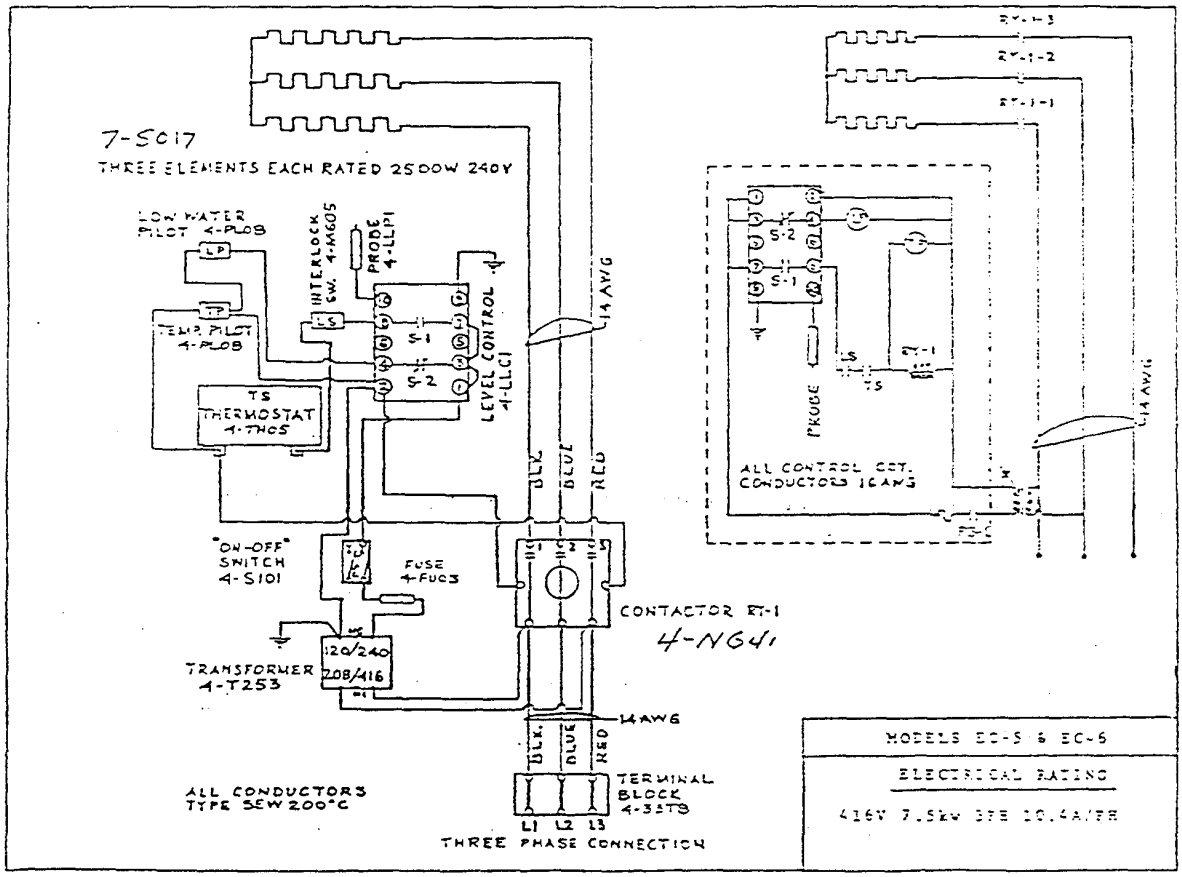


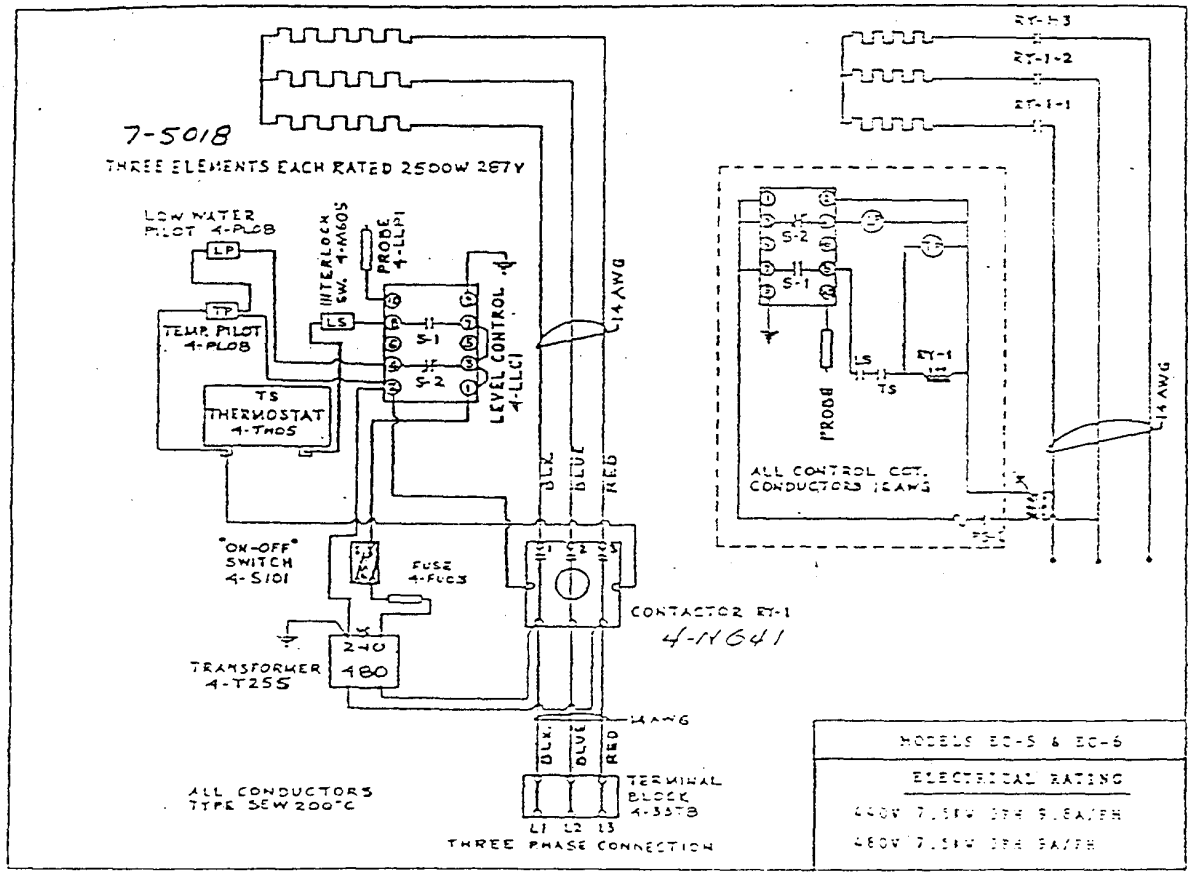
MODELS EC-10 & EC-20
ELECTRICAL RATING
440V 12KW 3PH 15.8A/PH
480V 12KW 3PH 14.5A/PH

SECTION 8: MODELS EC-10 & EC-20

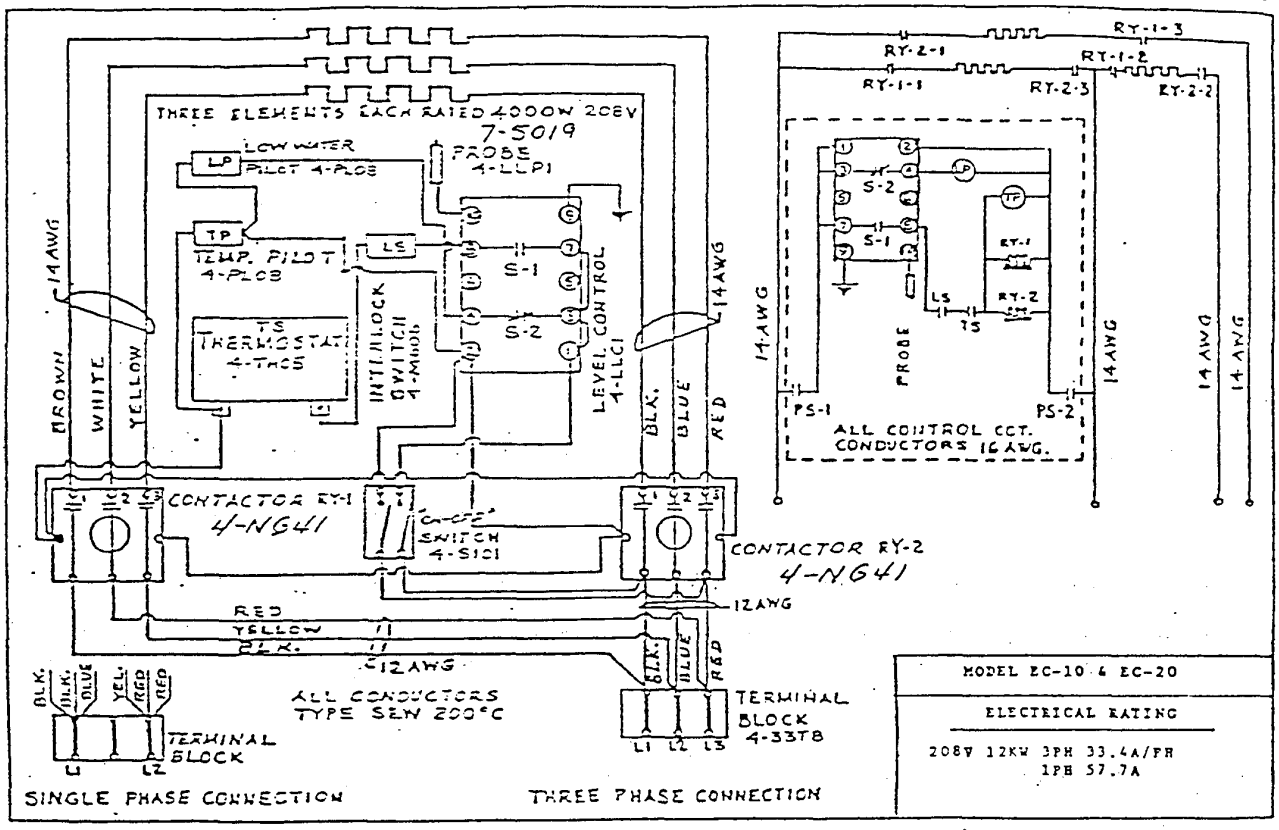


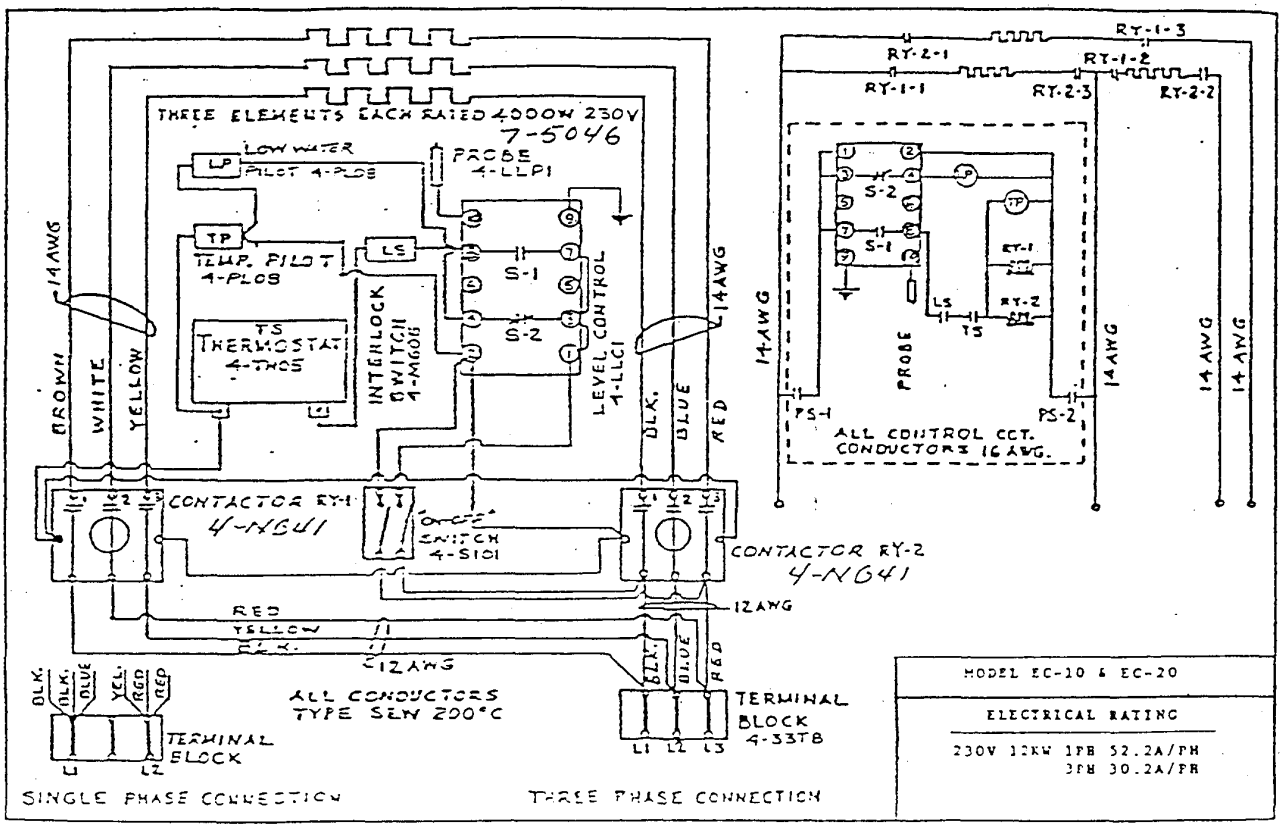



7-5017
THREE ELEMENTS EACH RATED 2500W 240V
LOW WATER PILOT 4-PL08
INTERLOCK SW. 4-MG05
PROBE 4-LLP1
TEMP. PILOT 4-PL08
TS THERMOSTAT 4-TH05
LEVEL CONTROL 4-LLC1
S-1
S-2
14 AWG
BLK.
BLUE
RED
"ON-OFF" SWITCH 4-S101
FUSE 4-FU03
CONTACTOR RY-1
4-NG41
TRANSFORMER 4-T253
120/240
208/416
14 AWG
TERMINAL BLOCK 4-35TB
L1 L2 L3
THREE PHASE CONNECTION
ALL CONDUCTORS TYPE SEW 200°C
RY-1-3
RY-1-2
RY-1-1
PROBE
LS
TS
RY-1
ALL CONTROL CCT. CONDUCTORS 16AWG
MODELS EC-5 & EC-6
ELECTRICAL RATING
416V 7.5kw 3PH 10.4A/PH

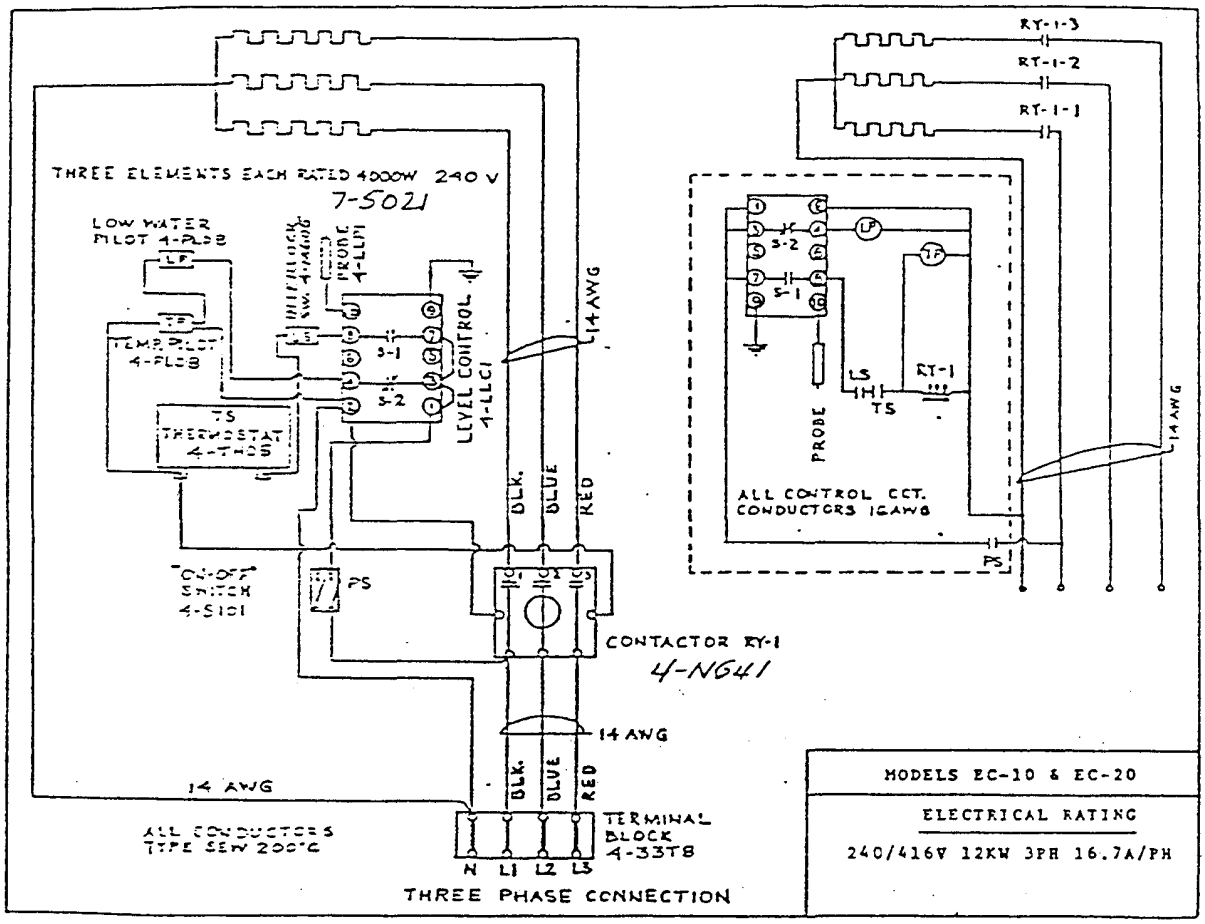

7-5018
THREE ELEMENTS EACH RATED 2500W 287V
LOW WATER PILOT 4-PL08
INTERLOCK SW. 4-MG05
PROBE 4-LLP1
TEMP. PILOT 4-PL08
TS THERMOSTAT 4-TH05
LEVEL CONTROL 4-LLC1
S-1
S-2
14 AWG
BLK.
BLUE
RED
"ON-OFF" SWITCH 4-S101
FUSE 4-FU03
CONTACTOR RY-1
4-NG41
TRANSFORMER 4-T255
240
480
14 AWG
TERMINAL BLOCK 4-35TB
L1 L2 L3
THREE PHASE CONNECTION
ALL CONDUCTORS TYPE SEW 200°C
RY-1-3
RY-1-2
RY-1-1
PROBE
LS
TS
RY-1
ALL CONTROL CCT. CONDUCTORS 16AWG
MODELS EC-5 & EC-6
ELECTRICAL RATING
480V 7.5kw 3PH 9.8A/PH

SECTION 8: MODELS EC-10 & EC-20

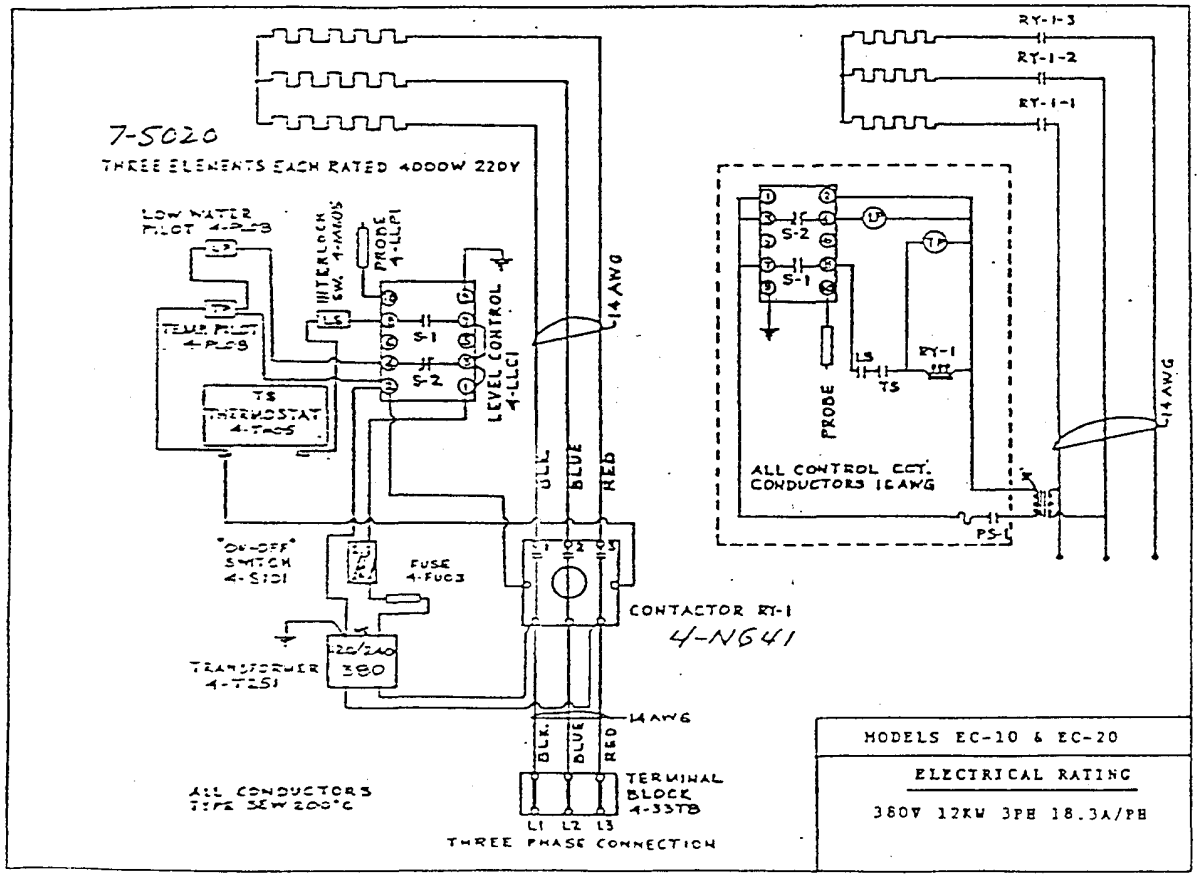




SECTION 8: MODELS EC-10 & EC-20



MODELS EC-10 & EC-20
ELECTRICAL RATING
240/416V 12KW 3PH 16.7A/PH



MODELS EC-10 & EC-20
ELECTRICAL RATING
380V 12KW 3PH 18.3A/PH

WIRING DIAGRAMS

SECTION 8: MODELS EC-10 & EC-20